

# **10<sup>th</sup> Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao PDR**

**Intergovernmental Tenth Regional Environmentally Sustainable Transport (EST) Forum in Asia**

**2030 Road Map for Sustainable Transport ~Aligning with Sustainable Transport Development Goals (SDGs)~**

## **Country Report**

**(Draft)**

**<Myanmar>**

-----  
This country report was prepared by the Government of Myanmar as an input for the Tenth Regional EST Forum in Asia. The views expressed herein do not necessarily reflect the views of the United Nations.

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

## Country EST Report (covering from Nepal EST Forum 2015 to Lao EST Forum 2017)

- a) Name of the Country: The Republic of the Union of Myanmar
  
- b) Name, Designation and Line Ministry/Agency Respondent: Ministry of Environmental Conservation and Forestry, Ministry of Transport and Communications, Ministry of Electricity and Energy
  
- c) List other Line Ministries/Agencies contributing to preparation of the Country Report: Ministry of Construction
  
- d) Reporting period: 2015-2017

With the objective of demonstrating the renewed interest and commitment of Asian countries towards realizing a promising decade (2010-2020) of sustainable actions and measures for achieving safe, secure, affordable, efficient, and people and environment-friendly transport in rapidly urbanizing Asia, the participating countries of the Fifth Regional EST Forum in Asia discussed and agreed on a goodwill and voluntary declaration - “**Bangkok Declaration for 2020 – Sustainable Transport Goals for 2010-2020.**” At the Seventh Regional EST Forum held in Bali in 2013, the participating countries adopted the “**Bali Declaration on Vision Three Zeros- Zero Congestion, Zero Pollution and Zero Accidents towards Next Generation Transport Systems in Asia**” reinforcing the implementation of Bangkok 2020 Declaration (2010-2020) with emphasis to zero tolerance towards congestion, pollution and road accidents in the transport policy, planning and development. Bali Vision Three Zeros calls for a paradigm shift in thinking on the role of motorization and mobility in realizing sustainable development in Asia. Subsequently, EST member countries adopted the “**Colombo Declaration**” for the promotion of next generation low-carbon transport solutions in Asia.

*Each member country of the Forum is kindly requested to prepare a consolidated country report (by **15 January 2017**) reflecting how EST trends and developments have taken place in the country from Nepal EST Forum 2015 to Lao PDR EST Forum 2017 around the Goals of the Bangkok 2020 Declaration as an interim assessment following the below format. You are most welcome to add extra pages or sections to share any major on-going initiatives or future plans, including mega transport projects, transport master plans, special transport corridor development, expansion of railways and rail route developments, etc.*

The objective of the Country Reporting is to share among international community the voluntary progress/achievements/initiatives include various challenges faced by countries in implementing each of the underlined goals of the Bangkok 2020 Declaration to realize the Bali Vision Three Zeros

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

- Zero Congestion, Zero Pollution, and Zero Accidents towards Next Generation Transport Systems in Asia. This would help development agencies, donors, development banks in assessing the sustainable transport needs and challenges to better devise their existing as well as future capacity building programs and operations in sustainable transport areas.

Timeline for submission by **15 January 2017.**

by email to: [est@uncrd.or.jp](mailto:est@uncrd.or.jp)

| Goal No.  | Goal Description  | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017. |   |   |
|---|---|--|---|---|
| <b>I. Strategies to <u>Avoid</u> unnecessary travel and reduce trip distances</b> |   |  |   |   |
| “Avoid” Strategy  | 1   | Formally integrate <b>land-use and transport planning</b> processes and related institutional arrangements at the local, regional, and national levels   | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box) | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Weakness in Housing Policy</li> <li>• Weakness of the Integrated land use and transport planning</li> </ul> |
|   | Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant. |  | <ul style="list-style-type: none"> <li>• Urban Transport Master Plan supported by JICA is being carried out.</li> <li>• National Transport Master Plan is being carried out.</li> </ul>   |   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.         | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.  |   |
|------------------|------------------|---|---|
|                  |                  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Comprehensive urban transport plan of the greater Yangon (YUTRA) is on-going .</li> <li>• State owned Enterprise road transport is being converted into public private partnership in a phase by phase manner.</li> </ul> |   |
|                  |                  | <p>What importance does this particular EST Goal attach in your country’s on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p>                   |   |
| “Avoid” Strategy | 2                | <p>Achieve <b>mixed-use development</b> and medium-to-high densities along key corridors within cities through appropriate land - use policies and provide people - oriented local access, and actively promote</p>   | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> Not yet</p> <p><input checked="" type="checkbox"/> <b>Some progress (design – piloting)</b></p> <p><input type="checkbox"/> Largely in Place</p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box)</p> |
|                  |                  |   | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Restricted Financial Support</li> </ul>  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description  | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |
|----------|---|--|
|          | transit-oriented development (TOD) when introducing new public transport infrastructure | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• The feasibility study for Rehabilitation and Modernization of Yangon- Mandalay Railway Project is on-going with the assistance of JICA.</li> <li>• Upgrading Yangon-Mandalay Highway.</li> </ul> |
|          |   | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Yangon – Mandalay Railway Improvement Project by Japanese ODA Loan</li> <li>• Yangon Circular Railway Line Upgrading Project by Japanese ODA Loan</li> <li>• Yangon-Mandalay Highway upgrading project.</li> </ul>   |
|          |   | <p>What importance does this particular EST Goal attach in your country’s on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p> <p><b>Goal (10): Reduce inequality within and among countries</b></p>  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.         | Goal Description  | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |   |
|------------------|---|--|---|
| “Avoid” Strategy | 3<br>Institute policies, programmes, and projects supporting <b>Information and Communications Technologies</b> (ICT), such as internet access, teleconferencing, and telecommuting, as a means to reduce unneeded travel | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input checked="" type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Early stage of infrastructure development</li> <li>• Capacity building</li> </ul> |
|                  |   | Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant. <ul style="list-style-type: none"> <li>• Telecommunication Sector Reform; 1 ) Policy 2 ) Legal 3 ) Institutional had been made.</li> <li>• PTD has officially issued auction framework for 2600 MHz to perform the Broadband Data Services Efficiently, and the auction has done on 17.10.2016.</li> <li>• The international Guideline for IGW has been issued on 8.9.2016.</li> <li>• Myanmar Telecommunications Master Plan is drafted in 2015 and now in the stage of public consultation.</li> <li>• Myanmar e- Government Master Plan (2016-2020) is drafted in 6.1.2017.</li> <li>• Website: <a href="http://www.mcit.gov.mm">www.mcit.gov.mm</a></li> </ul> |   |
|                  |   | Examples of important actions that you plan to carry out in next year (2017~2018). <ul style="list-style-type: none"> <li>• Myanmar Telecommunications Master Plan.(draft)</li> <li>• Myanmar e-Government Master Plan (2016-2020)</li> </ul>  |   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

|   |   |   |   |   |   |   |  |
|---|---|---|---|---|---|---|--|
| Goal No.  | Goal Description  | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>   |   |   |   |   |  |
|   |   | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <ul style="list-style-type: none"> <li>To help in achieving Goal No.1 Poverty reduction, No.3.Goal health well being, No.4. Quality Educator, No.5. Gender equality and No.8. Economic Growth.</li> </ul> |   |   |   |   |  |
| <b>II. Strategies to <u>Shift</u> towards more sustainable modes</b>  |   |   |   |   |   |   |  |
| "Shift" Strategy  | 4   | <p>Require <b>Non-Motorized Transport</b> (NMT) components in transport master plans in all major cities and prioritize transport infrastructure investments to NMT, including wide-scale improvements to pedestrian and bicycle facilities, development of facilities for intermodal connectivity, and adoption of complete street design standards, wherever feasible</p>                                       | <table border="1"> <tr> <td data-bbox="797 694 1357 986"> <p>Any action had been taken so far?</p> <input type="checkbox"/> Not yet<br/> <input type="checkbox"/> <b>Some progress (design – piloting)</b><br/> <input type="checkbox"/> Largely in Place<br/> <input type="checkbox"/> Fully Completed<br/>                     (Please Check the box)                 </td> <td data-bbox="1357 694 2072 986"> <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>Public Awareness</li> <li>Finance</li> <li>Weakness in policy formulation for NMT</li> <li>Weakness in design standards for road infrastructure</li> </ul> </td> </tr> <tr> <td colspan="2" data-bbox="797 986 2072 1374"> <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>Construction of separate roads for bicycles in Mandalay City</li> <li>Construction of separate roads and over bridges for pedestrians in Yangon City, Mandalay City and Nay Pyi Taw City</li> </ul> </td> </tr> </table> | <p>Any action had been taken so far?</p> <input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box) | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>Public Awareness</li> <li>Finance</li> <li>Weakness in policy formulation for NMT</li> <li>Weakness in design standards for road infrastructure</li> </ul> | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>Construction of separate roads for bicycles in Mandalay City</li> <li>Construction of separate roads and over bridges for pedestrians in Yangon City, Mandalay City and Nay Pyi Taw City</li> </ul> |  |
|   | <p>Any action had been taken so far?</p> <input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box) | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>Public Awareness</li> <li>Finance</li> <li>Weakness in policy formulation for NMT</li> <li>Weakness in design standards for road infrastructure</li> </ul>   |   |   |   |   |  |
| <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>Construction of separate roads for bicycles in Mandalay City</li> <li>Construction of separate roads and over bridges for pedestrians in Yangon City, Mandalay City and Nay Pyi Taw City</li> </ul> |   |   |   |   |   |   |  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.   | Goal Description   | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |   |  |  |
|--|--|--|---|--|--|
|  |  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Myanmar National Road Safety Action Plan (NRSAP) is being carried out.</li> </ul>  |   |  |  |
|  |  | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p> <p><b>Goal (11): Make cities and human settlements inclusive, safe, resilient and sustainable</b></p> <p><b>Goal (13): Take urgent action to combat climate change and its impacts</b></p> |   |  |  |
| "Shift" Strategy   | 5  | <p>Improve <b>public transport</b> services including high quality and affordable services on dedicated infrastructure along major arterial corridors in the city and connect with feeder services into residential communities</p>  | <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> <p>Any action had been taken so far?</p> <input type="checkbox"/> Not yet<br/> <input checked="" type="checkbox"/> <b>Some progress (design – piloting)</b><br/> <input type="checkbox"/> Largely in Place<br/> <input type="checkbox"/> Fully Completed<br/>                     (Please Check the box)                 </td> <td style="width: 50%;"> <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Weakness in Finance</li> <li>• Technical Assistance</li> <li>• Weakness in cooperation and collaboration among Government and Private organizations</li> <li>• Lack of policy to allocate GDP of the country to promote transport sector</li> </ul> </td> </tr> </table> | <p>Any action had been taken so far?</p> <input type="checkbox"/> Not yet<br><input checked="" type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box) | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Weakness in Finance</li> <li>• Technical Assistance</li> <li>• Weakness in cooperation and collaboration among Government and Private organizations</li> <li>• Lack of policy to allocate GDP of the country to promote transport sector</li> </ul> |
| <p>Any action had been taken so far?</p> <input type="checkbox"/> Not yet<br><input checked="" type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box) | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Weakness in Finance</li> <li>• Technical Assistance</li> <li>• Weakness in cooperation and collaboration among Government and Private organizations</li> <li>• Lack of policy to allocate GDP of the country to promote transport sector</li> </ul> |  |   |  |  |

## 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |
|----------|------------------|--|
|          |                  | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• Yangon Bus Service (YBS) is now being implemented in Yangon City.</li> <li>• Upgrading the existing major railway lines by external assistance including ODA loan, EDCF loan etc., and Grants, Technical Cooperation.</li> <li>• Upgrading Yangon- Nay Pyi Taw – Mandalay highway</li> </ul>   |
|          |                  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Myanmar National Transport Master Plan (MYT-Plan) is being carried out.</li> <li>• The process for the formulation of Project of National Logistics Master Plan is being carried out.</li> <li>• Upgrading Project for Comprehensive Urban Transport Plan of the Greater Yangon (YUTRA)</li> <li>• Yangon – Mandalay Railway Improvement Project by Japanese ODA Loan</li> <li>• Yangon Circular Railway Line Upgrading Project by Japanese ODA Loan</li> <li>• BRT system has already introduced in Yangon City.</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.         | Goal Description   | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.  |   |
|------------------|--|---|---|
|                  |  | What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?<br><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b><br><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b> |   |
| "Shift" Strategy | 6<br>Reduce the urban transport mode share of private motorized vehicles through <b>Transportation Demand Management</b> (TDM) measures, including pricing measures that integrate congestion, safety, and | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Poor Infrastructure</li> <li>• Inefficiency of Equipments</li> <li>• Weakness in Financial support</li> <li>• Weakness in knowledge &amp; Training</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description   | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |
|----------|--|--|
|          | pollution costs, aimed at gradually reducing price distortions that directly or indirectly encourage driving, motorization, and sprawl | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• Yangon City Development Committee has planned to implement parking in CBD and to build a multi-storied car parking in urban area</li> <li>• Install the modernized and synchronized intersection traffic signals in Yangon City</li> <li>• Project for comprehensive urban transport plan of the Greater Yangon(YUTRA)</li> <li>• YBS is now being implemented in Yangon City.</li> <li>• Yangon Transport Authority has been set up.</li> </ul> |
|          |  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Comprehensive Urban Transport Plan of the Greater Yangon (YUTRA) and Myanmar Transport Master Plan (MYT- Plan is being carried out.</li> </ul>   |
|          |  | <p>What importance does this particular EST Goal attach in your country’s on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b></p> <p><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p>   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description   | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>  |   |
|----------|--|--|---|
| 7        | Achieve significant shifts to more sustainable modes of <b>inter-city passenger and goods transport</b> , including priority for high-quality long distance bus, inland water transport, high-speed rail over car and air passenger travel, and priority for train and barge freight over truck and air freight by building supporting infrastructure such as dry inland ports | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input type="checkbox"/> Some progress (design - piloting)<br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Infrastructure</li> <li>• Technology</li> <li>• Modernized Equipment</li> </ul> |
|          |  | Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant. <ul style="list-style-type: none"> <li>• Upgrading and modernizing existing railway corridors</li> <li>• Promoting airport infrastructure under the PPP scheme.</li> </ul> |   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>   |
|----------|------------------|---|
|          |                  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Yangon – Mandalay Railway Improvement Project by Japanese ODA Loan</li> <li>• Mandalay-Myitkyina Railway Line Upgrading Project by Republic of Korea’s EDCF Loan</li> <li>• Negotiations on a concession agreement between the government entities and foreign investors who won the bidding concerned in order to build a new gateway airport to the country, namely Hanthawaddy International Airport. Yangon and Mandalay international airports have been handed-over to the private firms, under the respective concession agreement, to upgrade infrastructure and facilities of the said airports. All of these airport will be equipped with cargo facilities.</li> </ul> |
|          |                  | <p>What importance does this particular EST Goal attach in your country’s on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b></p> <p><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p>  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.  | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.          |   |  |
|---|------------------|---|---|--|
| <b>III. Strategies to <u>Improve</u> transport practices and technologies</b> |                  |   |   |  |
| ‘Improve’ Strategy  | 8                | Diversify towards more sustainable <b>transport fuels and technologies</b> , including greater market penetration of options such as vehicles operating on electricity generated from renewable sources, hybrid technology, and natural gas | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Lack of Research and Development system</li> <li>• Insufficient fuel standard</li> </ul> |
|   |                  |   | Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant. <ul style="list-style-type: none"> <li>• 46 CNG filling stations have been operating and 28,299 vehicles are already converted.</li> <li>• CNG cylinder capacity for vehicles will be increased so that the distance of travel can be extended, if there is surplus gas after industrial use.</li> <li>• LPG storage facilities are being initiated by private companies for transport sector.</li> </ul> |  |
|   |                  |   | Examples of important actions that you plan to carry out in next year (2017~2018) <ul style="list-style-type: none"> <li>• The license for the distribution of LPG in the transport sector will be issued by Myanmar Petrochemical Enterprise after completion of the final commissioning of LPG storage facilities.</li> <li>• The U.S technology for installing LPG tanks in the private sector will be used.</li> </ul>  |  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.           | Goal Description  | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |  |
|--------------------|---|--|--|
|                    |   | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <ul style="list-style-type: none"> <li>Identifying and discussion among EST member countries to reduce GHG emission by diversifying transport fuels and technologies as well as consideration to expand NGV (Natural Gas Vehicles) if the domestic gas supply is exceeded can contribute to our on-going efforts.</li> </ul> |  |
| "Improve" Strategy | 9<br>Set progressive, appropriate, and affordable <b>standards</b> for fuel quality, fuel efficiency, and tailpipe emissions for all vehicle types, including new and in-use vehicles | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input checked="" type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>Insufficient Laws and Rules</li> </ul> |
|                    |   | Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.  |  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.           | Goal Description   | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>  |   |
|--------------------|--|--|---|
|                    |  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Specification for fuel quality will be set in the LPG distribution license issued by Myanmar Petrochemical Enterprise.</li> </ul>  |   |
|                    |  | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b></p> |   |
| “Improve” Strategy | <p>10 Establish effective vehicle testing and compliance regimes, including formal vehicle registration systems and appropriate periodic vehicle <b>inspection and maintenance</b> (I/M) requirements, with particular</p> | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> Not yet</p> <p><input type="checkbox"/> Some progress (design – piloting)</p> <p><input checked="" type="checkbox"/> <b>Largely in Place</b></p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box)</p>          | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Weakness in Research and Development</li> <li>• Weakness in advanced technology and equipment</li> <li>• Weakness in skilled workers</li> <li>• Restricted financial assistance</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description   | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |
|----------|--|--|
|          | emphasis on commercial vehicles, to enforce progressive emission and safety standards, resulting in older polluting commercial vehicles being gradually phased-out from the vehicle fleet, as well as testing and compliance regimes for vessels | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• Vehicles Multi-testing lanes were installed in some major cities</li> <li>• Exhaust Emission Testers were installed in some cities</li> <li>• Private sector involvement for vehicle inspection will be introduced</li> <li>• Recruit and train the engineers</li> <li>• Apply computerized vehicle registration system</li> <li>• Apply computerized driving licensing system</li> <li>• Apply ASEAN standards for vehicle emission</li> <li>• Introduce RFID system</li> </ul> |
|          |  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Multi Test Lanes for Motor Vehicles, Multi Test Lanes for Two-wheelers and Dual Emission Testers will be installed.</li> <li>• Private Organizations will be participated in vehicle inspection business.</li> </ul>   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.           | Goal Description   | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.  |  |
|--------------------|--|---|--|
|                    |  | What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?<br><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b><br><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b> |  |
| "Improve" Strategy | 11 Adopt <b>Intelligent Transportation Systems</b> (ITS), such as electronic fare and road user charging systems, transport control centres, and real-time user information, when applicable | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Weakness in Technology</li> <li>• Weakness in Finance</li> <li>• Weakness in HR</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>   |
|----------|------------------|---|
|          |                  | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• Myanmar is eager to utilize ICT in Transport Sector. Currently, Yangon City Development Committee has introduced BRT System and prepaid card system in order to provide the better public transport services.</li> <li>• Install CCTV cameras in intersection of traffic lights in Yangon City</li> <li>• Periodic announcement of traffic jam situation in FM radio</li> <li>• On Yangon- Mandalay Expressway, Telematics system is used and controlled by Traffic Control Center for the safety of coach.</li> <li>• It is now implementing to monitor the whole traffic flow of Yangon City via a Central Control Center.</li> </ul> |
|          |                  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• RFID System is about to be introduced</li> <li>• Electronic toll collection (ETC) system is prepared to use.</li> </ul>   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.           | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |   |
|--------------------|------------------|--|---|
|                    |                  | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b></p> <p><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p> |   |
| "Improve" Strategy | 12               | <p>Achieve improved <b>freight transport</b> efficiency, including road, rail, air, and water, through policies, programmes, and projects that modernize the freight vehicle technology, implement fleet control</p>   | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> Not yet</p> <p><input type="checkbox"/> <b>Some progress (design – piloting)</b></p> <p><input type="checkbox"/> Largely in Place</p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box)</p> <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Insufficient Investment</li> <li>• Technology</li> <li>• Capacity Building</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description   | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>  |
|----------|--|--|
|          | and management systems, and support better logistics and supply chain management | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• There are (4) main rivers, namely, Ayeyarwaddy, Chindwin, Tanlwin and Sittaung, in Myanmar which were used for the freight transportation for many years. However, it doesn't still have any facility to accommodate the container cargo along the rivers. So, we plan (6) inland ports with modernized facilities in Sagaing, Mandalay, Pakoutku, Magwe, Monywa and Kalaywa. Out of which, Mandalay Port is the first priority to establish as early as possible. Myanmar Railways is inviting the private sector investment for freight transportation such as container freight train and fuel train.</li> <li>• Establishment of Dry Ports to be linked the key potential places for the Freight Transport and logistics in Multi-model Transport.</li> <li>• An air transport policy is being drafted which fosters air freight services;</li> </ul> <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Implementing the Dry Port Project at Ywathagyi (Yangon Region) and Myitnge (Mandalay Region)</li> <li>• The process for the formulation of Project of National Logistics Master Plan is being carried out.</li> <li>• Mandalay International Airport has been handed-over to a foreign private firm since 1 April 2015 to upgrade the airport to become an aviation logistic hub.</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.                                   | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |   |
|--|------------------|--|---|
|  |                  | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b></p> <p><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p> |   |
| <b>IV. <u>Cross-cutting</u> strategies</b> |                  |  |   |
| “Cross-Cutting”                            | 13               | <p>Adopt a zero-fatality policy with respect to road, rail, and waterway <b>safety</b> and implement appropriate speed control, traffic calming strategies, strict driver licensing, motor vehicle registration, insurance requirements, and better post-accident care oriented to significant reductions in accidents and injuries</p>  | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> Not yet</p> <p><input type="checkbox"/> Some progress (design – piloting)</p> <p><input checked="" type="checkbox"/> <b>Largely in Place</b></p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box</p> <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Financial constraint</li> <li>• Weakness in public awareness</li> <li>• Weakness in collaboration and cooperation among concerned organizations</li> <li>• Weakness of ICT</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |
|----------|------------------|--|
|          |                  | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes</p> <ul style="list-style-type: none"> <li>• Establish National Road Safety Council (NRSC)</li> <li>• Establish regional Road Safety Councils in Regions and States</li> <li>• Formulate National Road Safety Action Plan</li> <li>• Implement the following (4) programmes guided by NRSC               <ul style="list-style-type: none"> <li>- Wearing seat belt by drivers and passengers</li> <li>- Wearing standardized helmets by Motorcycle riders</li> <li>- Avoiding drink driving</li> <li>- Avoiding the use of hand phone while driving</li> </ul> </li> <li>• Upgrade physical, theoretical and psychological tests for drivers</li> <li>• Modify Motor Vehicle Laws and Motor Vehicle Rules</li> <li>• Install vehicle multi-testing lanes</li> <li>• Set Hot Line number for road accidents</li> <li>• Perform Global Road Safety Weeks Campaigns in nationwide</li> <li>• Add Road Safety subjects in school curriculums</li> <li>• Enact a section concerning seat belt in Motor Vehicle Law and take action</li> <li>• Take action by using speedometer on Highway</li> <li>• Take action for post-crash responses on Highway</li> <li>• Perform Road Safety awareness programmes</li> <li>• Hold the road safety engineering workshop in States and Regions and road safety audit training</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.                 | Goal Description   | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>   |   |
|--------------------------|--|---|---|
|                          |  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)<br/>National Road Safety Action Plan will be carried out.</p> <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?<br/><b>Goal (7): Ensure access to affordable, reliable, sustainable and modern energy for all</b><br/><b>Goal (9): Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b></p> |   |
| “Cross-Cutting” Strategy | <p>14 Promote monitoring of the <b>health</b> impacts from transport emissions and noise, especially with regard to incidences of asthma, other pulmonary diseases, and heart disease in major cities, assess the economic impacts of air pollution and noise, and devise mitigation strategies, especially aiding sensitive populations near high traffic</p> | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> Not yet</p> <p><input type="checkbox"/> Some progress (design – piloting)</p> <p><input type="checkbox"/> Largely in Place</p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box)</p> <p><b>Note: Will be informed later</b></p>  | <p>Barriers/Challenges faced in implementation:</p> |
|                          |  | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p>  |   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.        | Goal Description   | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |  |
|-----------------|--|--|--|
|                 | concentrations   | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p>   |  |
| “Cross-Cutting” | <p>15 Establish country-specific, progressive, health-based, cost-effective, and enforceable <b>air quality and noise</b> standards, also taking into account the WHO guidelines, and mandate monitoring and reporting in order to reduce the occurrence of days in which pollutant levels of particulate matter, nitrogen oxides, sulphur oxides, carbon monoxide, and ground-level ozone exceed the national standards or zones where noise levels exceed the national standards, especially with regard to environments near high</p> | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> Not yet</p> <p><input checked="" type="checkbox"/> <b>Some progress (design - piloting)</b></p> <p><input type="checkbox"/> Largely in Place</p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box)</p>  | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Technical Assistance</li> <li>• Comprehensive Environmental Quality Monitoring System</li> <li>• Baseline Data for Environmental Quality</li> </ul> |
|                 |  | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• National Environmental Quality (Emission) Guidelines (December, 2015)</li> </ul> |  |
|                 |  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Formulation National Environmental Quality Standards</li> </ul>  |  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.                 | Goal Description   | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>  |   |
|--------------------------|--|--|---|
|                          | traffic concentrations   | What importance does this particular EST Goal attach in your country’s on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?<br><b>Goal (3): Ensure healthy lives and promote well-being for all at all ages</b> |   |
| “Cross-Cutting” Strategy | 16<br>Implement sustainable low-carbon transport initiatives to mitigate the causes of <b>global climate change</b> and to fortify national <b>energy security</b> , and to report the inventory of all greenhouse gases emitted from the transport sector in the National Communication to the UNFCCC | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)                        | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Limited indigenous natural gas supply while increasing energy demand in transport sector</li> <li>• Budget constraint</li> <li>• Technical Assistance</li> <li>• Institutional Strengthening</li> <li>• Financial Assistance</li> </ul> |

## 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.  |
|----------|------------------|---|
|          |                  | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• Energy policy encourages to accelerate the utilization of gas with a momentum in order to decrease Diesel fuels and Motor oil consumption as a low- carbon initiative.</li> <li>• National Climate Change Strategy and Action Plans (NCCS&amp;APs)</li> <li>• Promoting Data for Climate Change, Drought and Flood Management in Myanmar (Cooperation with Climate Technology Centre &amp; Network – CTCN)</li> </ul> |

## 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |
|----------|------------------|--|
|          |                  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• It is planned to use LPG for vehicles.</li> <li>• National Climate Change Strategy and Action Plans (NCCS&amp;APs) - Continuing the actions to prepare National Climate Change Policy, Strategy and Action Plan integrating climate change in the development planning and also to mainstream climate change into the Myanmar policy development and reform agenda.</li> <li>• Promoting Data for Climate Change, Drought and Flood Management in Myanmar (Cooperation with Climate Technology Centre &amp; Network – CTCN) – Continuing the actions to get the technical assistance at the request of developing countries to accelerate the transfer of climate technologies, information and knowledge on climate technologies and also to foster the collaboration among climate technology stakeholders via the Centre’s network of regional and sectoral experts from academia, the private sector, and public and research institutions.</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.        | Goal Description   | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>   |   |
|-----------------|--|---|---|
|                 |  | <p>What importance does this particular EST Goal attach in your country’s on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <ul style="list-style-type: none"> <li>• Various policy options, technologies and financing mechanisms adopted for EST goal can attach in our country’s on-going efforts.</li> <li>• Formulation and setting Strategy and Action Plans for Climate Change are aiming to achieve the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development.</li> </ul> <p><b>Goal (13): Take urgent action to combat climate change and its impacts</b></p> <p><b>Goal (14): Conserve and sustainably use the oceans, seas and marine resources for sustainable development</b></p> <p><b>Goal (15): Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</b></p> |   |
| “Cross-Cutting” | 17 Adopt <b>social equity</b> as a planning and design criteria in the development and implementation of transport initiatives, leading to improved quality, safety and security for all and especially for women, universal | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> Not yet</p> <p><input type="checkbox"/> <b>Some progress (design – piloting)</b></p> <p><input type="checkbox"/> Largely in Place</p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box)</p>  | <p>Barriers/Challenges faced in implementation:</p> <ul style="list-style-type: none"> <li>• Finance</li> <li>• Technical Assistance</li> <li>• Best Practices</li> </ul> |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description  | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.  |
|----------|---|---|
|          | accessibility of streets and public transport systems for persons with disabilities and elderly, affordability of transport systems for low-income groups, and up-gradation, modernization and integration of intermediate public transport | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• Currently IWT under MOT is providing daily ferry services between Yangon and Dala for the well fare of poor people.</li> <li>• To enact the law for the disabled.</li> <li>• YBS is being implemented.</li> </ul> |
|          |   | Examples of important actions that you plan to carry out in next year (2017~2018)   |
|          |   | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (1): End poverty in all its forms everywhere</b></p> <p><b>Goal (4): Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</b></p>  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.                 | Goal Description   | <b>Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.</b>   |  |
|--------------------------|--|---|--|
| “Cross-Cutting” Strategy | 18 Encourage innovative <b>financing</b> mechanisms for sustainable transport infrastructure and operations through measures, such as parking levies, fuel pricing, time-of-day automated road user charging, and public-private partnerships such as land value capture, including consideration of carbon markets, wherever feasible | Any action had been taken so far?<br><input type="checkbox"/> <b>Not yet</b><br><input type="checkbox"/> Some progress (design – piloting)<br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Study the best practices of other development countries</li> </ul> |
|                          |  | Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant. <ul style="list-style-type: none"> <li>• Myanmar is a poor country and she has several challenges for transport sector development. Out of the challenges, finance is the key constraint for transport sector so that government is talking majority to transport infrastructure developments with private sector investment. The ODA Loans and state budget are also used for urgent development. In order to take the effective measures for transport planning and investment, the government is aiming to use to be at least 4 % of GDP.</li> </ul> |  |
|                          |  | Examples of important actions that you plan to carry out in next year (2017~2018)   |  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.                 | Goal Description   | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.  |   |
|--------------------------|--|---|---|
|                          |  | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (16): Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</b></p>                            |   |
| “Cross-Cutting” Strategy | 19 Encourage widespread distribution of <b>information and awareness</b> on sustainable transport to all levels of government and to the public through outreach, promotional campaigns, timely reporting of monitored indicators, and participatory processes | Any action had been taken so far?<br><input type="checkbox"/> Not yet<br><input type="checkbox"/> <b>Some progress (design – piloting)</b><br><input type="checkbox"/> Largely in Place<br><input type="checkbox"/> Fully Completed<br>(Please Check the box)   | Barriers/Challenges faced in implementation: <ul style="list-style-type: none"> <li>• Weakness in regularity</li> <li>• Weakness in cohesion among concerned parties</li> </ul> |
|                          |  | Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant. <ul style="list-style-type: none"> <li>• Quarterly data collection as a part of ASEAN Japan Other Affairs</li> <li>• Road Safety data is regularly collected and announced in newspapers periodically.</li> </ul> |   |
|                          |  | Examples of important actions that you plan to carry out in next year (2017~2018) <ul style="list-style-type: none"> <li>• Myanmar Transport Master Plan (MYT-Plan) is being carried out.</li> <li>• National Road Safety Action Plan (NRSAP) is being carried out.</li> </ul>  |   |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No.                 | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.   |  |  |
|--------------------------|------------------|--|--|--|
|                          |                  | <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (16): Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</b></p> <p><b>Goal (17): Strengthen the means of implementation and revitalize the global partnership for sustainable development</b></p> |  |  |
| "Cross-Cutting" Strategy | 20               | Develop dedicated and funded <b>institutions</b> that address sustainable transport-land use policies and implementation, including research and development on environmentally-sustainable transport, and promote good <b>governance</b> through implementation of environmental impact assessments for major transport projects  | <p>Any action had been taken so far?</p> <p><input type="checkbox"/> <b>Not yet</b></p> <p><input type="checkbox"/> Some progress (design – piloting)</p> <p><input type="checkbox"/> Largely in Place</p> <p><input type="checkbox"/> Fully Completed</p> <p>(Please Check the box)</p> | Barriers/Challenges faced in implementation: |
|                          |                  |  | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions. Please attach reports or include websites where relevant.</p>   |  |

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

| Goal No. | Goal Description | Voluntary Progress/Achievements/Major Initiatives, including any transport master plans, development of special transport corridors, in Implementing the Bangkok 2020 Declaration from Nepal EST Forum 2015 to Lao EST Forum 2017.  |
|----------|------------------|---|
|          |                  | <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <hr/> <p>What importance does this particular EST Goal attach in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <p><b>Goal (16): Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</b></p> <p><b>Goal (17): Strengthen the means of implementation and revitalize the global partnership for sustainable development</b></p> |

Major policy initiatives/projects/action plan to improve rural access:

|                 |  |   |   |
|-----------------|--|---|---|
| “Cross-Cutting” | Take policy initiatives to <b>improve rural access</b> leading, leading to improved quality, safety and security for all and especially for women, disadvantaged groups persons with disabilities and elderly, | List some of actions taken to improve rural access in your country so far? <ul style="list-style-type: none"> <li>• Implementing with 15 years Plan for rural roads starting from 2015-2016 to 2030- 2031 fiscal years (Annex-1)</li> </ul> | Barriers/Challenges faced <b>in improving rural connectivity:</b> <ul style="list-style-type: none"> <li>• Financial Investment need</li> </ul> |
|-----------------|--|---|---|

# 10th Regional EST Forum in Asia, 14-16 March 2017, Vientiane, Lao-PDR

|  |  |  |   |
|--|--|--|---|
|  |  | <p>low-income groups, access to farms, agriculture centers, education and health</p> | <p>Please add few specific examples of initiatives, pilot projects, major policies or programmes developed or under development (or) any major investment decisions to <b>improve rural access</b>. Please attach reports or include websites where relevant.</p> <ul style="list-style-type: none"> <li>• DRD is preparing National Strategy for Rural Roads and Access (Second draft). Final Strategy will finish at the end of March.(Annex-2)</li> </ul> <hr/> <p>Examples of important actions that you plan to carry out in next year (2017~2018)</p> <ul style="list-style-type: none"> <li>• Concrete road - 30/4 Mile/Ful</li> <li>• Bitumen road - 47/1 Mile/Ful</li> <li>• Macadam road - 101/7 Mile/Ful</li> <li>• Earth road - 22/6 Mile/Ful</li> <li>• See attach (annex- 3 )</li> <li>• Cooperation with the development partners ( World Bank ,ADB , KfW , ReCAP) to improve the rural roads and rural area. (annex-4)</li> </ul> <hr/> <p>Importance of improving <b>rural access</b> in your country's on-going efforts in achieving the Sustainable Development Goals (SDGs) under the 2030 Agenda for Sustainable Development?</p> <ul style="list-style-type: none"> <li>• Rural roads are increasingly being built to an all-season standard that provides year-round access, while sustainability is ensured both through appropriate designs that are adapted to climate impacts and proper maintenance.</li> </ul> |
|--|--|--|---|

**Rural Roads and Bridges Implement in 2015-2016  
2030-2031 Government Budget**

**to**

**Annex-1**

| State/Region | CRRN 2016     |               | CRRN 2030     |               | Periodic<br>maintenance | Routine<br>maintenance |
|--------------|---------------|---------------|---------------|---------------|-------------------------|------------------------|
|              | All-season    | Dry-season    | All-season    | Dry-season    |                         |                        |
|              | miles         | miles         | miles         | miles         | \$ million              | \$ million             |
| Naypyitaw    | 490           | 220           | 599           | 125           | 16                      | 4                      |
| Kachin       | 1,011         | 997           | 1,978         | 464           | 45                      | 12                     |
| Kayah        | 472           | 228           | 582           | 118           | 16                      | 4                      |
| Kayin        | 1,039         | 754           | 2,146         | 384           | 48                      | 12                     |
| Chin         | 182           | 2,795         | 3,656         | 532           | 58                      | 20                     |
| Sagaing      | 2,235         | 5,255         | 6,358         | 1,431         | 129                     | 45                     |
| Tanintharyi  | 1,186         | 485           | 1,558         | 245           | 41                      | 10                     |
| Bago         | 1,776         | 2,438         | 3,083         | 1,131         | 73                      | 25                     |
| Magway       | 1,484         | 3,994         | 5,482         | 951           | 104                     | 33                     |
| Mandalay     | 2,176         | 2,460         | 3,198         | 1,438         | 81                      | 28                     |
| Mon          | 700           | 500           | 700           | 500           | 21                      | 7                      |
| Rakhine      | 944           | 1,341         | 3,624         | 745           | 69                      | 18                     |
| Yangon       | 640           | 741           | 1,184         | 227           | 27                      | 8                      |
| Shan         | 5,066         | 9,077         | 11,072        | 3,070         | 242                     | 85                     |
| Ayeyarwady   | 1,055         | 2,353         | 3,354         | 788           | 66                      | 20                     |
| <b>Total</b> | <b>20,455</b> | <b>33,637</b> | <b>48,573</b> | <b>12,152</b> | <b>1,035</b>            | <b>332</b>             |

Government of the Republic of the Union of Myanmar

# National Strategy for Rural Roads and Access

SECOND DRAFT

January 2017



## Contents

|     |  |    |
|-----|--|----|
| 1.  | Introduction.....                              | 1  |
| 2.  | Objectives and guiding principles .....        | 3  |
| 3.  | Rural road standards and specifications.....   | 5  |
| 4.  | Rural roads and bridges .....                  | 9  |
| 5.  | Rural access.....                              | 11 |
| 6.  | Core Rural Road Network.....                   | 13 |
| 7.  | Investment needs .....                         | 15 |
| 8.  | Sustainability and maintenance .....           | 18 |
| 9.  | Financing .....                                | 20 |
| 10. | Planning and prioritization .....              | 23 |
| 11. | Budget allocation .....                        | 26 |
| 12. | Monitoring and Key Performance Indicators..... | 28 |
| 13. | Institutional responsibilities .....           | 29 |

## Acronyms and abbreviations

|       |   |
|-------|---|
| DOB   | Department of Bridges                             |
| DOH   | Department of Highways                            |
| DRD   | Department of Rural Development                   |
| DSO   | Development Supervisory Office                    |
| DSS   | Development Supervisory Sub-Office                |
| MMK   | Myanmar Kyat                                      |
| MOALI | Ministry of Agriculture, Livestock and Irrigation |
| MOBA  | Ministry of Border Affairs                        |
| MOHA  | Ministry of Home Affairs                          |
| MOC   | Ministry of Construction                          |
| MOTC  | Ministry of Transport and Communications          |
| NRRA  | National Rural Road Agency                        |
| SDG   | Sustainable Development Goals                     |
| TDC   | Township Development Committee                    |
| US\$  | United States Dollar                              |
| VDC   | Village Development Committee                     |

In this document an exchange rate of US\$ 1 = MMK 1,350 has been used  
(as per 01 January 2017)

## Tables

|          |   |    |
|----------|---|----|
| Table 1  | Minimum rural road standards .....  | 7  |
| Table 2  | Rural road lengths by surface type (miles).....                             | 9  |
| Table 3  | Rural bridge data.....  | 10 |
| Table 4  | 2016 village access levels (#) .....  | 11 |
| Table 5  | Estimated CRRN lengths (miles) .....  | 13 |
| Table 6  | Estimated 2017-2030 CRRN requirements for upgrading and construction .....  | 15 |
| Table 7  | Estimated CRRN and access status by 2030 .....                              | 17 |
| Table 8  | Estimated 2016-2030 CRRN requirements for maintenance .....                 | 19 |
| Table 9  | Annual budget allocations to rural roads and bridges for DRD and MOBA ..... | 20 |
| Table 10 | Expected funding levels by source of funding.....                           | 21 |
| Table 11 | Impact of different budget scenarios on access levels.....                  | 22 |
| Table 12 | Estimated CRRN requirements.....  | 26 |
| Table 13 | Key performance indicators for rural roads and access.....                  | 28 |

## Figures

|           |  |    |
|-----------|--|----|
| Figure 1  | Sustainable Development Goals .....                                      | 2  |
| Figure 2  | Strategy Objective.....  | 3  |
| Figure 3  | Core Rural Road Network (CRRN) .....                                     | 6  |
| Figure 4  | 2016 village access levels (% of villages) .....                         | 12 |
| Figure 5  | Estimated CRRN lengths (miles) .....                                     | 14 |
| Figure 6  | Estimated 2017-2030 CRRN upgrading and construction lengths (miles)..... | 16 |
| Figure 7  | Estimated 2017-2030 CRRN investment needs (US\$ million).....            | 16 |
| Figure 8  | Expected 2030 village access levels (%) .....                            | 17 |
| Figure 9  | Village and rural population access levels .....                         | 22 |
| Figure 10 | Prioritization of villages .....   | 24 |
| Figure 11 | Budget allocation by state/region .....                                  | 27 |

# 1. Introduction

1. Nearly 15% of registered villages in Myanmar are not connected by road. Of the villages that are connected by road, more than 40% are linked by dry-season rural roads that quickly become impassable during the rainy season<sup>1</sup>. Altogether, half the existing registered villages are physically isolated during part or all of the year due to a lack of all-season rural road access, affecting over 14 million rural people. This lack of all-season rural roads is severely affecting rural people's access to health services, education, employment opportunities, markets, and other services and facilities, limiting their development and that of the country as a whole.

2. Poor transport infrastructure and related means of transport lead to unnecessary mortality, with an estimated 75% of perinatal mortality worldwide associated with inadequate transport. Better rural roads have internationally been proven to lead to better primary and secondary school attendance for boys and girls, better staffing and teacher attendance and better teaching facilities due to easier transport of educational and construction materials. Significant international evidence exists that providing road access leads to improved market access, greater use of fertilizers and agricultural inputs, enhanced agricultural production, higher employment, living standards and poverty reduction. Improved rural transport infrastructure greatly reduces the costs related to transporting people and goods, leading to increases in economic growth and reducing rural isolation and poverty as mobility rates are increased and interaction with markets and services is improved.

3. Without proper roads, rural people cannot access the services and facilities they need to improve their lives and to participate in the national economy. The Government of Myanmar considers improved rural roads to be key to developing rural areas and addressing rural poverty and inequalities in the country. This is in line with the 2030 Sustainable Development Goals (SDGs), which the Government of Myanmar has committed itself to achieving. Rural road development and the resulting improved access to services and facilities are expected to support the following SDGs:

- **SDG #1 related to poverty reduction**– Rural roads have been proven to provide access to employment opportunities outside the villages, while also providing access to markets for selling produce and purchasing inputs, and facilitating access to education to improve future income earning opportunities.
- **SDG #2 related to hunger reduction**– Rural roads have been proven to lead to higher incomes and related food consumption, while also facilitating access to knowledge and inputs necessary for increasing agricultural produce.
- **SDG #3 related to improved health**– Rural roads have been proven to provide access to health facilities and services and to health education, leading to improved health standards in rural areas.
- **SDG #4 related to improved education**– Rural roads have been proven to facilitate year-round access to education facilities, reducing the costs and difficulties of obtaining an education and reducing drop-out rates.
- **SDG #8 related to improved employment opportunities**– Rural roads have been proven to increase and facilitate access to employment opportunities outside the village, as well as increasing income earning opportunities within the village.
- **SDG #9 related to building resilient infrastructure**– Rural roads are increasingly being built to an all-season standard that provides year-round access, while sustainability is ensured both through appropriate designs that are adapted to climate impacts, and proper maintenance.

---

<sup>1</sup> A portion of villages are also connected by higher-level dry-season roads that are not covered by this strategy.

- **SDG #10 related to reduced inequalities**– The increased access to services and facilities resulting from rural roads has been proven to lead to a reduction in inequalities between (remote) rural areas and the rest of the country.

Figure 1 Sustainable Development Goals



4. This *National Strategy for Rural Roads and Access* was jointly prepared by the Ministry of Agriculture, Livestock and Irrigation (MOALI) and the Ministry of Border Affairs (MOBA) with technical support from the Asian Development Bank (ADB). It serves to guide investments in the rural road sector over the coming 15 years, ensuring that these investments contribute in an optimal manner to addressing the problems of limited access, providing as many rural people as possible with all-season access by 2030.

## 2. Objectives and guiding principles

5. In support of the Sustainable Development Goals (SDGs), the Government of Myanmar aims to improve the access of the rural population to services and facilities by providing rural villages with road access. To ensure that rural people can make use of this road access throughout the year, the Government of Myanmar will construct and upgrade the rural roads connecting these villages to an all-season standard.

6. The long-term development objective of the Government of Myanmar is to provide all-season access to all villages in Myanmar. In support of this long-term development objective, this *National Strategy for Rural Roads and Access* targets the next 15 years up to 2030, during which the Government of Myanmar aims to provide all-season road access to at least 80% of the villages in each state/region in Myanmar.

7. To maximize the number of rural people benefitting from all-season road access, the Government of Myanmar will give priority to providing road access to villages with larger populations. The Government of Myanmar will prioritize villages with more than 1,000 people, all of which will be connected by all-season roads by 2020<sup>2</sup>. The second priority for the Government of Myanmar will be villages with more than 500 people, with at least 95% of these villages to be connected by all-season road by 2025. The third priority for the Government of Myanmar will be to target villages with more than 250 people, connecting at least 75% of these villages by all-season roads by 2030. Villages with less than 250 people will also be included, with at least 50% of these villages connected by all-season road by 2030. To ensure that all states and regions will benefit equally, irrespective of their population size, the Government of Myanmar will connect at least 80% of all registered villages in each state/region by all-season road.

8. By prioritizing the villages with larger populations, the Government of Myanmar will connect an additional 10 million rural people by all-season road, providing year-round road access to approximately 90% of the rural population in the country by 2030. The Government of Myanmar will furthermore provide dry-season road access to an additional 6,700 villages, ensuring that at least 90% of the villages in each state/region and up to 95% of the country's rural population have some form of road access by 2030.

Figure 2 Strategy Objective

***To provide year-round access to approximately 90% of the rural population in Myanmar by connecting at least 80% of all villages in each state/region by all-season road by 2030***

9. **Eligible villages.** The Government of Myanmar aims to connect villages that have been formally registered in the Government Gazette by the General Administration Department (GAD) under the Ministry of Home Affairs (MOHA). As of March 2015, there are 63,860 villages spread over the 330 townships<sup>3</sup> and 74 districts that make up the 14 States and Regions, the Union Territory of Naypyitaw and the 5 Self-Administered Zones (SAZ) and 1 Self-Administered Division (SAD). A data collection exercise regarding the access levels of these villages concluded that approximately 6,600 villages no longer exist (were destroyed or deserted) or are managed by other entities (e.g. Yangon City Development Council). This strategy therefore focuses on the remaining 57,228 registered villages still in existence.

<sup>2</sup> Two-thirds of these larger villages are already connected by higher-level roads or by all-season rural roads.

<sup>3</sup> Of the total 330 townships, only 297 have registered villages. The remaining 33 townships involve urban areas. In 6 of the townships with registered villages in Yangon Region, the management of the rural roads has been taken over by Yangon City Development Council.

10. By 2020, all theregistered villages with more than 1,000 people will be connected by all-season rural roads or higher-level roads. By 2025, at least 95% of the registered villages with more than 500 people will be connected by all-season rural roads or higher-level roads. By 2030, 80% of the registered villages in each state/region will be connected by all-season road, including at least 75% of all registered villages with more than 250 people, and approximately 50% of the remaining smaller registered villages with less than 250 people.

11. The large number of non-existing villages shows a need to update the GAD registration of villages. In addition, several villages have not been formally registered by GAD due to security concerns in the areas where they are located. Because of these security concerns, the Government of Myanmar is unable to effectively assist these villages in the development of their rural road networks. Accurate data regarding these villages is also lacking. These villages have therefore not yet been included in the scope of this strategy. However, the Government of Myanmar will continuously aim to resolve the security concerns, at which time these villages may be formally registered. Once the formal registration of the villages has been updated, the villages to be included in the scope of this strategy will be amended.

### 3. Rural road standards and specifications

12. **All-season standard.** The Government of Myanmar aims to provide registered villages with road access of an all-season standard. Such an all-season standard may still experience road closures during heavy rains or periods of flooding, but such closures will be limited to a maximum of a few days, as opposed to a dry-season road that is impassable for much of the rainy season.

13. **National Rural Road Standards and Specifications.** The minimum specifications of the all-season standard will be defined in detail in the *National Rural Road Standards and Specifications* (NRRSS) that are currently under preparation with support from development partners. The main objective of the standards and specifications to be applied under this strategy is that they must be appropriate in terms of current and foreseen future usage of the rural roads. Firstly, the standards and specifications must suit the road function and its traffic (both people as well as vehicles). The standards and specifications must furthermore be compatible with the capacities of the engineers and technicians that will design the roads, with the materials that are available for building the roads, with the capacities of the contractors and laborers that will construct the roads, and with the skill levels of the villagers and local contractors that will be involved in the maintenance of the roads. The standards and specifications furthermore aim to achieve a balance between the costs of road construction or upgrading, and the subsequent costs of maintaining the road, avoiding that excessive maintenance burdens are placed on local budgets or communities, but also avoiding unnecessarily expensive designs that quickly use up the available investment budgets. In this context, there will be some variation between different states/regions regarding the exact type of all-season standard to be applied, taking account of the various factors influencing the most suitable design and its maintenance (e.g. climate, topography, soil types, construction materials, traffic volumes, etc.). The main aspects of the all-season standard are summarized below, while further details will be provided in the NRRSS. Where there is a difference between this strategy and the NRRSS, the NRRSS will have precedence.

14. **Core Rural Road Network (CRRN).** To ensure that available funding for rural roads and access is used efficiently and effectively in achieving the objective of this strategy, the concept of a Core Rural Road Network (CRRN) will be applied. The CRRN refers to the minimum rural road network in a township required to connect all villages to each other and to the higher-level road network. Through the CRRN, villages will be able to gain access to village tracts and the township capital, and connect to higher-level roads that link to the district capital, state/regional capitals and major cities of the country, thus providing villages with access to all services and facilities that the country can offer.

15. Villages directly connected by higher-level roads managed by the Ministry of Construction (MOC) or other higher-level roads managed by entities such as the Irrigation Department or the Ministry of Electricity and Energy, will be considered connected and will not be provided with a separate CRRN connection. All other villages will be connected by a single rural road that will be identified as a CRRN road. Where a village is connected only by one rural road, that road will be selected as part of the CRRN. Where a village is connected by more than one rural road, the best road will be selected to form part of the CRRN, taking account of the length, surface type, condition and traffic volumes in the different existing rural roads. Where a village is not connected by any road, a tentative alignment will be identified, which will be selected as part of the CRRN for new construction. The CRRN will consist of the existing single road access for each connected village, as well as the tentative alignments for new construction linking unconnected villages. Locations with important economic or cultural importance may also be connected by the CRRN (e.g. temples, touristic places, important agricultural areas, etc.), taking into account the limitation of single road access.

Figure 3 Core Rural Road Network (CRRN)

**The Core Rural Road Network (CRRN) is the minimum rural road network in a township required to connect all villages to each other and to the higher-level road network**

- *If a village is connected directly by a higher-level road, it does not require a CRRN road*
- *If a village is connected by only one rural road, that road forms part of the CRRN*
- *If a village is connected by more than one road, the best road is selected to form part of the CRRN*
- *If a village is not connected by a road, a tentative alignment is selected to form part of the CRRN for new construction.*

16. **Rural road classes.** Rural roads will be classified into three rural road classes. The first two rural road classes involve roads that belong to the core rural road network (CRRN), while the third class involves other rural roads. Class A rural roads include all core rural roads that connect village tracts (where the village development committees are located) or that connect rural populations of over 1,000 people with the higher-level road network. This may involve a road connecting a single large village, but may also involve a road (section) connecting multiple villages with a combined population of more than 1,000 people. Due to the larger populations served by class A roads and the importance of providing good connectivity for village development committees and for services and facilities provided in the village tracts, higher standards and specifications will be applied to class A rural roads. Class A rural roads connect directly to the higher-level roads or to towns and cities<sup>4</sup>.

17. Class B rural roads include all other core rural roads connecting villages and serving populations of less than 1,000 people. These class B rural roads serve smaller villages or fewer villages, and will have lower standards and specifications than class A roads, but will be constructed and upgraded to an all-season standard. Class B rural roads will generally connect to class A rural roads, although it is possible that they connect smaller villages directly to higher-level roads or towns.

18. Class C rural roads include all other rural roads that are not defined as part of the core rural road network and that do not serve as the main connection to a village. Although these class C rural roads provide additional access to agricultural fields and link habitations that are located away from the main village, they do not contribute to the main objective of this strategy. As such, they do not have priority for upgrading to an all-season standard.

19. **Road surface type.** Class A rural roads will be constructed and upgraded to have a sealed surface (cement concrete or bituminous) in line with their importance and the envisaged traffic levels of these roads. Class B rural roads will initially be constructed and upgraded to have an improved, unsealed road surface. In most cases this will involve a dry-bound or water-bound macadam surface, although gravel and other suitable materials may be applied in some areas in line with the National Rural Road Standards and Specifications (NRRSS). Such an improved unsealed road surface will allow the road to be used in most weather conditions and throughout the year (roads may be impassable during heavy rains and periods of flooding, but this should generally not last longer than a few days). Class C rural roads will generally have an earthen surface and will not receive priority for upgrading to a higher surface standard under this strategy.

20. An approach of stepped upgrading will be applied, where class B rural roads that have traffic volumes that exceed the minimum threshold for sealing as defined in the NRRSS, will be eligible for a higher surface standard and will be upgraded to have a sealed surface. In built-up areas (through villages), roads may also be sealed to reduce dust pollution. In areas subject to frequent flooding, higher construction standards may be applied that are more resistant to flooding and that ensure the sustainability of the road (e.g. stone paving or cement concrete). Higher surface standards may also

---

<sup>4</sup> However, roads connecting smaller villages to the higher-level road network will not be considered class A roads, since they only benefit a small population and are likely to carry low traffic volumes.

be applied on steep slopes with the aim of reducing erosion and avoiding accelerated deterioration of the road surface (e.g. stone paving or sealed surfaces).

21. **Road carriageway width.** Class A and class B roads will have a minimum carriageway width of 12 feet. An approach of stepped upgrading will be applied, where for class A and B rural roads with larger traffic volumes that exceed the minimum threshold for widening as defined in the NRRSS, the width of the carriageway may be increased to 18 feet or more. Where topography requires significant cut and fill to achieve the defined carriageway width and in flood prone areas where road construction requires the use of more expensive flood resistant designs, a narrower carriageway width with single lane access of 6 or 9 feet may be opted for, ensuring sufficient passing places. Class C roads may have a carriageway width of less than 12 feet, depending on local conditions.

22. **Drainage system and bridges.** Class A and class B rural roads will include proper sidedrains and cross drainage. Sidedrains may be earthen, but must be lined where the risk of erosion is high (generally where slopes are greater than 6%) and where they go through villages. Cross drainage structures, including bridges, will be built from cement concrete or steel and have a load bearing capacity of at least 20 tons. In class A rural roads and in those class B rural roads where traffic volumes exceed the minimum traffic threshold for bridge strengthening as defined in the NRRSS, a load bearing capacity in line with AASHTO HS20-44 standards will be applied. Timber structures may only be used as temporary measures in class A and class B rural roads and should be gradually upgraded to concrete or steel structures. Class C roads may continue to make use of timber bridges.

23. **Slope protection.** Class A and class B roads will include proper protection of cut and fill slopes and embankments to avoid extensive damage from occurring to the road. Depending on the circumstances, this may vary from vegetative protection (bio-engineering) to retaining walls (concrete, masonry or gabion). Construction and upgrading works will identify and include adequate slope protection measures.

**Table 1 Minimum rural road standards**

|                           | Surface type               | Carriageway width | Side drains   | Bridges          | Bridge carrying capacity |
|---------------------------|----------------------------|-------------------|---------------|------------------|--------------------------|
| Class A                   | Sealed surface             | 12 feet           | Earthen/Lined | Steel / concrete | AASHTO HS20-44 (36 tons) |
| Class B                   | Improved, unsealed surface | 12 feet           | Earthen/Lined | Steel / concrete | 20 tons                  |
| Class C                   | Earthen                    | 6-12 feet         | Earthen       | Timber           |                          |
| Traffic > NRRSS threshold | Sealed surface             | 18 feet           |               | Steel / concrete | AASHTO HS20-44 (36 tons) |

24. **Alternative standards and access solutions.** Although it is the objective of the Government of Myanmar to connect registered villages by all-season class A or class B rural roads with standards and specifications as described above, exceptions may occur where the prescribed standards and specifications are found to be economically unviable. This may be the case for exceptionally small villages with very few beneficiaries, or where the terrain makes the construction of all-season roads prohibitively expensive (for instance in very steep terrain or in flood prone areas). In these cases, lower standards and specifications may be applied to the roads concerned or alternative access solutions may be selected in negotiation with the population. Such alternative access solutions may include motorcycle tracks instead of roads, jetties and dredged channels to facilitate water transport where road construction is severely complicated by waterways, the use of footbridges to connect isolated villages to the rural road network, etc.

25. **Climate resilience and sustainability.** Under this *National Strategy for Rural Roads and Access*, use will be made of climate resilient designs that take account of the differences in climate vulnerability (flood risk, erosion risk, rainfall, drought, etc.) in the various parts of the country. Appropriate designs will be applied that find a balance between the risks of climate impacts and related repair and maintenance costs on the one hand, and the construction costs on the other hand.

This will result in different areas applying different standards in line with the expected climate impacts in those areas, reducing total lifecycle costs and increasing the sustainability of improved access. Climate resilient aspects in designs will primarily be evident in the level of the carriageway, the construction materials used (to withstand flooding and erosion), the types and dimensions of drainage structures (to deal with increased rain volumes and intensities and related peak runoff flows), and the slope and embankment protection measures (to avoid collapse due to flooding or erosion). In the preparation of the *National Rural Road Standards and Specifications*, suitable design standards for the different areas of the country will be identified and trialed. For existing roads, climate back strengthening will be applied, targeting possible vulnerable road sections through a spot improvement program, linking to planned periodic maintenance works where possible. Improved maintenance will also be introduced to reduce possible climate impacts and ensure that improvements in access levels are sustained.

## 4. Rural roads and bridges

26. **Rural roads.** Rural roads are defined as the lowest level roads managed by the Department of Rural Development (DRD) under the Ministry of Agriculture, Livestock and Irrigation (MOALI) and by the Ministry of Border Affairs (MOBA). These do not include the higher-level roads managed by the Ministry of Construction (MOC) or by other ministries and departments such as the Department of Irrigation or the Ministry of Electricity and Energy, nor do they include the urban roads managed by the City Development Councils and Town Development Councils.

27. As per August 2016, there are just under 60,000 miles of registered rural roads in Myanmar, jointly managed by DRD and MOBA. Only 6% of the rural road network has a sealed cement concrete or bituminous surface, while 28% has an improved dry-bound or water-bound macadam, gravel or laterite surface. Only a third of the rural roads currently have an improved surface and are likely to be passable all year round<sup>5</sup>. The remaining two-thirds of the registered rural road network consist of earthen roads that are generally only passable in the dry season.

28. In addition to the 60,000 miles of registered rural roads, there are nearly 6,000 miles of registered jeep and motorcycle tracks, ox-cart tracks and footpaths (these are mainly located in Chin State, where they form three-quarters of the registered network).

**Table 2 Rural road lengths by surface type (miles)**

| State/Region | DRD                 |                  |               | MOBA                |                  |              | Total roads   | Tracks / paths |
|--------------|---------------------|------------------|---------------|---------------------|------------------|--------------|---------------|----------------|
|              | Cement / Bituminous | Macadam / Gravel | Earthen       | Cement / Bituminous | Macadam / Gravel | Earthen      |               |                |
| Naypyitaw    | 61                  | 428              | 672           | -                   | -                | -            | <b>1,162</b>  | 429            |
| Kachin       | 96                  | 421              | 1,512         | 13                  | 482              | 744          | <b>3,267</b>  | -              |
| Kayah        | 35                  | 119              | 220           | 19                  | 299              | 323          | <b>1,015</b>  | -              |
| Kayin        | 80                  | 528              | 532           | 113                 | 318              | 222          | <b>1,793</b>  | -              |
| Chin         | 19                  | 63               | 1,630         | 8                   | 92               | 1,199        | <b>3,010</b>  | 5,292          |
| Sagaing      | 245                 | 1,466            | 5,655         | 43                  | 480              | 646          | <b>8,536</b>  | -              |
| Tanintharyi  | 220                 | 392              | 1,513         | 39                  | 536              | 524          | <b>3,223</b>  | -              |
| Bago         | 156                 | 1,620            | 2,438         | -                   | -                | -            | <b>4,214</b>  | -              |
| Magway       | 111                 | 1,373            | 4,241         | -                   | -                | -            | <b>5,725</b>  | 40             |
| Mandalay     | 338                 | 1,838            | 2,460         | -                   | -                | -            | <b>4,636</b>  | -              |
| Mon          | 185                 | 266              | 389           | 55                  | 194              | 385          | <b>1,473</b>  | -              |
| Rakhine      | 99                  | 520              | 1,011         | 38                  | 288              | 330          | <b>2,285</b>  | -              |
| Yangon       | 434                 | 206              | 932           | -                   | -                | -            | <b>1,571</b>  | -              |
| Shan         | 494                 | 1,837            | 6,894         | 543                 | 2,192            | 2,183        | <b>14,142</b> | -              |
| Ayeyarwady   | 245                 | 810              | 2,353         | -                   | -                | -            | <b>3,408</b>  | -              |
| <b>Total</b> | <b>2,817</b>        | <b>11,886</b>    | <b>32,450</b> | <b>871</b>          | <b>4,881</b>     | <b>6,556</b> | <b>59,462</b> | <b>5,761</b>   |
| Percentage   | 5%                  | 20%              | 55%           | 1%                  | 8%               | 11%          | 100%          |                |

Source: DRD August 2016 + MOBA December 2016

29. **Higher-level roads.** The rural roads connect to higher-level roads that provide access to township and district capitals as well as to other states and regions. These higher-level roads are managed by various other ministries and departments other than DRD and MOBA. The most important of these is the Ministry of Construction (MOC) that manages over 25,000 miles of higher-level roads connecting to other countries, connecting the different states and regions, and connecting to district capitals and towns. These roads are complemented by other higher-level roads managed by various sector agencies such as the Ministry of Electricity and Energy and the Department of Irrigation. Some of these roads currently have an earthen dry-season standard (e.g. 20% of MOC

<sup>5</sup> This assumes that roads are not in very poor condition and that water crossings are provided for.

roads). This strategy assumes that these roads will be upgraded to an all-season standard by the ministries and departments responsible for them.

30. **Rural bridges.** There are currently over 23,000 registered bridges and causeways in the rural road network, spanning a total length of over 574,000 feet. Timber bridges make up a third of the total number and nearly half the total length. Concrete bridges make up a quarter of the number and length, while box culverts make up 40% of the number, but only 11% of the length. Causeways are becoming increasingly important, forming 10% of the total length. Larger suspension bridges only form 1% of the number of bridges, but cover 5% of the total length. To ensure the sustained access, the timber bridges will gradually need to be replaced by more resilient infrastructure.

**Table 3 Rural bridge data**

| State/Region | Timber bridge |                | Concrete bridge |                | Box culvert  |               | Causeway   |               | Suspension bridge |               | Bailey bridge |              |
|--------------|---------------|----------------|-----------------|----------------|--------------|---------------|------------|---------------|-------------------|---------------|---------------|--------------|
|              | #             | feet           | #               | feet           | #            | feet          | #          | feet          | #                 | feet          | #             | feet         |
| Naypyitaw    | 58            | 5,479          | 23              | 1,229          | 129          | 678           | 11         | 718           |                   |               |               |              |
| Kachin       | 282           | 10,977         | 176             | 3,498          | 149          | 2,426         | 1          | 400           | 49                | 10,646        |               |              |
| Kayah        | 175           | 3,654          | 176             | 2,933          | 250          | 1,471         | 25         | 744           |                   |               |               |              |
| Kayin        | 88            | 3,473          | 402             | 10,601         | 415          | 2,610         |            |               |                   |               |               |              |
| Chin         | 124           | 10,598         | 10              | 950            | 246          | 9,049         | 1          | 140           | 75                | 15,770        | 3             | 220          |
| Sagaing      | 1,452         | 66,651         | 492             | 13,357         | 946          | 9,532         | 251        | 12,990        |                   |               |               |              |
| Tanintharyi  | 382           | 10,806         | 137             | 7,833          | 285          | 1,542         |            |               |                   |               |               |              |
| Bago         | 976           | 33,911         | 461             | 10,163         | 951          | 5,000         | 21         | 625           |                   |               | 10            | 1,122        |
| Magway       | 312           | 13,316         | 205             | 5,130          | 546          | 3,602         | 206        | 16,144        | 8                 | 3,070         |               |              |
| Mandalay     | 496           | 17,482         | 386             | 8,095          | 755          | 4,174         | 230        | 22,895        |                   |               |               |              |
| Mon          | 188           | 5,873          | 689             | 19,254         | 408          | 2,272         | 30         | 244           |                   |               |               |              |
| Rakhine      | 300           | 7,201          | 639             | 17,982         | 1,269        | 6,131         |            |               |                   |               |               |              |
| Yangon       | 170           | 7,975          | 281             | 9,390          | 369          | 3,197         |            |               |                   |               | 6             | 1,110        |
| Shan         | 1,709         | 24,750         | 1,004           | 16,822         | 1,574        | 8,030         | 66         | 402           | 1                 | 140           |               |              |
| Ayeyarwady   | 592           | 36,627         | 447             | 23,910         | 1,042        | 5,834         | 6          | 280           | 1                 | 320           |               |              |
| <b>Total</b> | <b>7,304</b>  | <b>258,773</b> | <b>5,528</b>    | <b>151,147</b> | <b>9,334</b> | <b>65,548</b> | <b>848</b> | <b>55,582</b> | <b>134</b>        | <b>29,946</b> | <b>19</b>     | <b>2,452</b> |
| Percentage   | 31%           | 45%            | 24%             | 26%            | 40%          | 11%           | 4%         | 10%           | 1%                | 5%            | 0.1%          | 0.4%         |

\* This includes suspension bridges and bailey bridges as well as various other bridges.

Source: DRD August 2016

## 5. Rural access

31. **Rural access.** The rural roads and bridges are a means to an end, the end being to provide rural people with access to services and facilities, allowing them to develop and improve their livelihoods and to participate in the national economy. A significant portion of the rural population in Myanmar still lacks road access, while an even larger portion of the rural population faces physical isolation during part of the year when dry-season roads become impassable due to rains and flooding.

32. **Village access levels.** In December 2016, data on village access levels was collected from all townships in Myanmar. This showed that 12,405 villages (22% of the 57,228 existing registered villages in Myanmar<sup>6</sup>) are connected by higher level roads, 16,238 villages (28%) are connected by all-season rural roads, 20,355 villages (36%) are connected by dry-season rural roads and 8,230 villages (14%) have no road access whatsoever. This means that half the existing registered villages have either dry-season road access or no road access at all, and are physically isolated for at least part of the year.

33. **Population access levels.** The village access level data has been cross-referenced with population data from the 2014 census. Villages connected directly by higher-level roads and by all-season rural roads tend to have larger populations, while villages connected by dry-season rural roads and especially the villages still lacking road access, tend to have smaller populations. The data shows that approximately 9.4 million people (28% of the village population) are connected by higher level roads, 10.2 million people (30%) are connected by all-season rural roads, 10.1 million people (28%) are connected by dry-season rural roads and 4.0 million people (11%) have no road access whatsoever<sup>7</sup>.

Table 4 2016 village access levels (#)

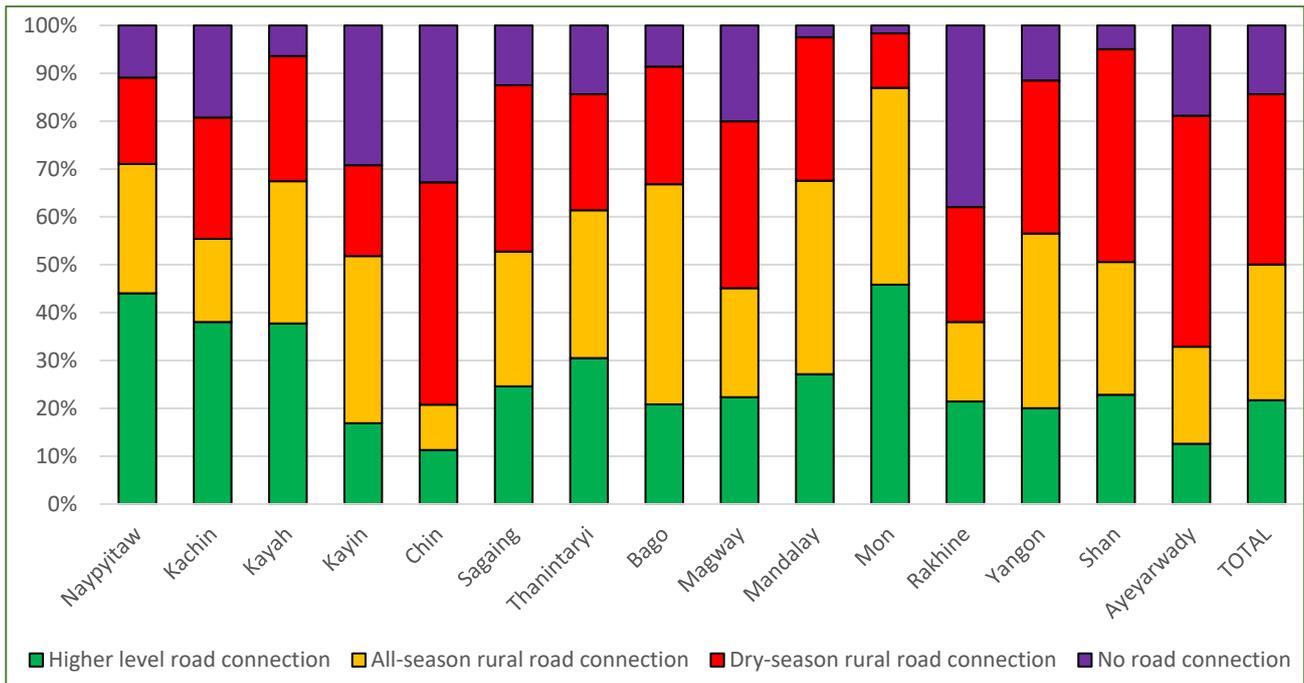
| State/<br>Region | Total         |                   | Higher-level<br>road connection |                   | All-season rural<br>road connection |                   | Dry-season rural<br>road connection |                   | No road<br>connection |                   |
|------------------|---------------|-------------------|---------------------------------|-------------------|-------------------------------------|-------------------|-------------------------------------|-------------------|-----------------------|-------------------|
|                  | villages      | million<br>people | villages                        | million<br>people | villages                            | million<br>people | villages                            | million<br>people | villages              | million<br>people |
| Naypyitaw        | 788           | 0.8               | 347                             | 0.4               | 213                                 | 0.2               | 142                                 | 0.1               | 86                    | 0.1               |
| Kachin           | 1,175         | 1.0               | 447                             | 0.5               | 204                                 | 0.3               | 298                                 | 0.1               | 226                   | 0.0               |
| Kayah            | 501           | 0.2               | 189                             | 0.1               | 149                                 | 0.1               | 131                                 | 0.0               | 32                    | 0.0               |
| Kayin            | 1,918         | 1.2               | 324                             | 0.3               | 670                                 | 0.5               | 364                                 | 0.2               | 560                   | 0.1               |
| Chin             | 1,330         | 0.4               | 150                             | 0.1               | 126                                 | 0.0               | 618                                 | 0.2               | 436                   | 0.1               |
| Sagaing          | 5,955         | 4.4               | 1,465                           | 1.2               | 1,675                               | 1.3               | 2,070                               | 1.4               | 745                   | 0.5               |
| Tanintharyi      | 1,010         | 0.9               | 308                             | 0.3               | 312                                 | 0.3               | 245                                 | 0.2               | 145                   | 0.1               |
| Bago             | 6,188         | 3.7               | 1,289                           | 0.9               | 2,846                               | 1.5               | 1,521                               | 0.9               | 532                   | 0.4               |
| Magway           | 4,754         | 3.3               | 1,062                           | 0.8               | 1,082                               | 0.8               | 1,657                               | 1.1               | 953                   | 0.6               |
| Mandalay         | 4,779         | 4.0               | 1,296                           | 1.3               | 1,932                               | 1.7               | 1,433                               | 1.0               | 118                   | 0.1               |
| Mon              | 1,143         | 1.4               | 524                             | 0.6               | 470                                 | 0.7               | 130                                 | 0.1               | 19                    | 0.0               |
| Rakhine          | 3,727         | 1.7               | 799                             | 0.4               | 618                                 | 0.3               | 895                                 | 0.4               | 1,415                 | 0.6               |
| Yangon           | 2,017         | 1.7               | 404                             | 0.5               | 736                                 | 0.6               | 645                                 | 0.4               | 232                   | 0.1               |
| Shan             | 10,140        | 3.8               | 2,315                           | 1.1               | 2,812                               | 1.1               | 4,511                               | 1.4               | 502                   | 0.2               |
| Ayeyarwady       | 11,803        | 5.2               | 1,486                           | 0.8               | 2,393                               | 1.0               | 5,695                               | 2.5               | 2,229                 | 1.1               |
| <b>Total</b>     | <b>57,228</b> | <b>33.7</b>       | <b>12,405</b>                   | <b>9.4</b>        | <b>16,238</b>                       | <b>10.2</b>       | <b>20,355</b>                       | <b>10.1</b>       | <b>8,230</b>          | <b>4.0</b>        |
|                  | 100%          | 100%              | 22%                             | 28%               | 28%                                 | 30%               | 36%                                 | 30%               | 14%                   | 12%               |

Source: DRD, 2014 census, ADB TA-8788

<sup>6</sup> Of the 63,860 registered villages, 6,167 villages (10%) were indicated to no longer exist (destroyed or deserted) or to be managed by other entities (e.g. Yangon City Development Council), and for 465 villages (0.7%) no data was received.

<sup>7</sup> No access level data was received for 465 villages with approximately 0.3 million people.

Figure 4 2016 village access levels (% of villages)



34. Half the villages (over 28,500 villages) and two-fifths of the rural population (14 million rural people) currently face physical isolation during at least part of the year. The rest of the rural population lives in the larger villages that are connected directly by higher-level roads<sup>8</sup> or by all-season rural roads (50% of the villages with 58% of the rural population).

35. This *National Strategy for Rural Roads and Access* sets an objective of providing at least 80% of all existing registered villages in each state and region with all-season access by 2030, providing year-round access to approximately 87% of the rural population. This is to be achieved by upgrading the rural roads connecting most of the 20,355 villages with dry-season access, and by constructing additional rural roads to connect some of the 8,230 villages currently lacking road access. In doing so, priority will be given to the villages with larger populations. The improved access will be further expanded by providing dry-season road access to some villages, expanding road access to a minimum of 90% of villages in each state and region and reaching an estimated 95% of the rural population in the country. The strategy further aims to introduce proper maintenance of the rural roads connecting the different villages, in order to sustain the improved access levels that have been achieved.

36. **Rural transport services.** Although this strategy focuses on rural transport infrastructure, particularly roads, the importance of rural transport services must also be highlighted. Many rural people do not own personal means of transport that they can use, and are dependent on public transport services. Without access to public transport services, many people are unable to reap the benefits of road access. These public transport services may vary from informal transport services provided by neighbors who have a motorcycle or other vehicle and can offer a basic transport service for passengers and/or goods, to formalized transport services that provide regular public transport along fixed routes. The formalized public transport services require a license from the Road Transport Administration Department (RTAD) under the Ministry of Transport and Communications (MOTC). A recent ADB study<sup>9</sup> found that rural transport generally responds well to demand, that transport fees are usually competitive and fair, and that the standard of rural transport services quickly improves once road access is provided. However, this will need to be continuously monitored to ensure that the expected benefits of improved rural road access are indeed achieved.

<sup>8</sup> It must be noted that some of these higher-level roads currently have a dry-season standard and become inaccessible during part of the year.

<sup>9</sup> *Myanmar Transport Sector Policy Note: Rural Roads and Access*, Asian Development Bank, 2016.

## 6. Core Rural Road Network

37. **Core Rural Road Network (CRRN).** The CRRN has yet to be identified for most townships in Myanmar. A pilot study<sup>10</sup> covering 14 townships in the districts of Hinthada, Myingyan and Langkho, included the identification of the core rural road networks for these townships. Based on the results from these 14 pilot townships and the data from the village access level study, it is estimated that a core rural road network of approximately 69,000 miles is required to connect all existing registered villages in Myanmar (in addition to the higher-level roads that directly connect a portion of these villages and connect the CRRN roads with each other).

38. It is further assumed that approximately 90% of the existing rural roads form part of the CRRN (the other 10% are considered to be non-CRRN roads duplicating access to villages or connecting to other areas). This means that approximately 54,000 miles of CRRN roads already exist, including 20,455 miles of existing all-season rural roads (100% of the existing all-season rural roads that form 30% of the CRRN) and approximately 33,600 miles of existing dry-season rural roads that require upgrading to all-season access (89% of the existing dry-season rural roads that form 49% of the CRRN). To connect the 8,230 villages that currently lack road access, it is estimated that an additional 15,000 miles of new CRRN roads need to be constructed to complete the CRRN (22% of the CRRN).

Table 5 Estimated CRRN lengths (miles)

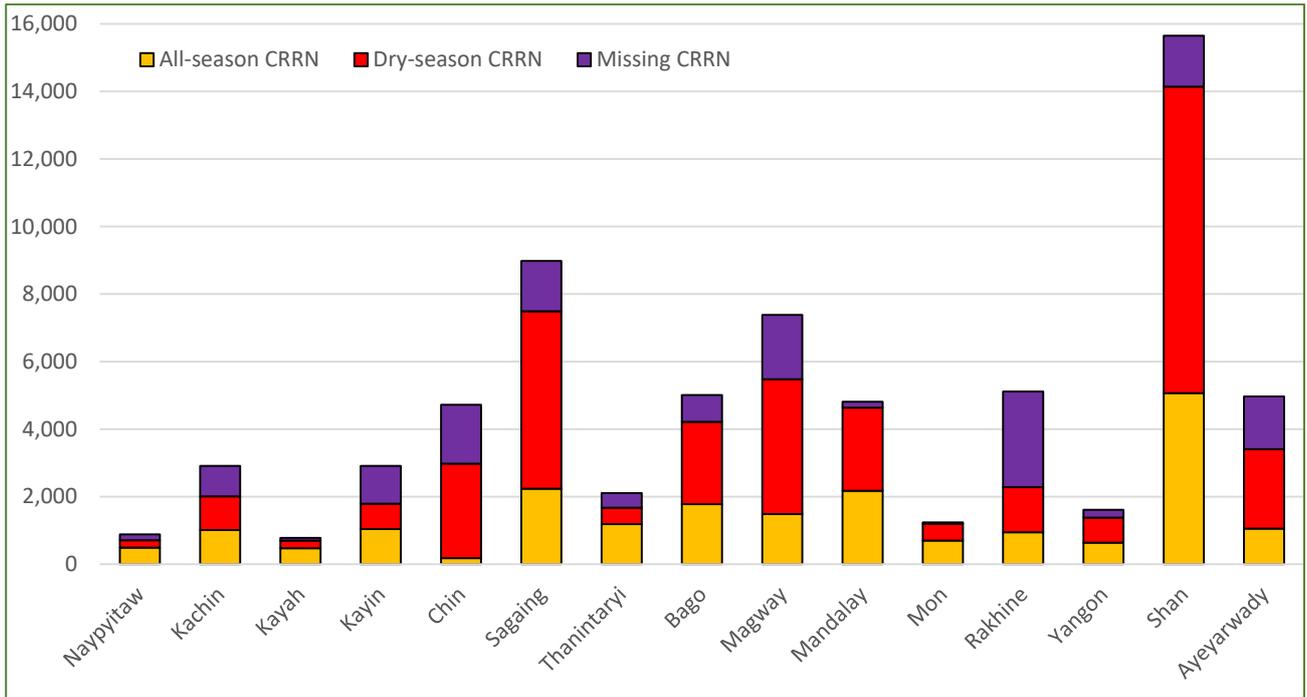
| State/Region | CRRN length miles | Existing CRRN all-season standard |            | Existing CRRN dry-season standard |            | Existing CRRN miles | CRRN for new construction |            |
|--------------|-------------------|-----------------------------------|------------|-----------------------------------|------------|---------------------|---------------------------|------------|
|              |                   | miles                             | %          | miles                             | %          |                     | miles                     | %          |
| Naypyitaw    | <b>880</b>        | 490                               | 56%        | 220                               | 25%        | 710                 | 170                       | 20%        |
| Kachin       | <b>2,910</b>      | 1,010                             | 35%        | 1,000                             | 34%        | 2,010               | 900                       | 31%        |
| Kayah        | <b>780</b>        | 470                               | 61%        | 230                               | 29%        | 700                 | 80                        | 10%        |
| Kayin        | <b>2,910</b>      | 1,040                             | 36%        | 750                               | 26%        | 1,790               | 1,120                     | 38%        |
| Chin         | <b>4,720</b>      | 180                               | 4%         | 2,800                             | 59%        | 2,980               | 1,740                     | 37%        |
| Sagaing      | <b>8,980</b>      | 2,240                             | 25%        | 5,260                             | 59%        | 7,490               | 1,490                     | 17%        |
| Tanintharyi  | <b>2,110</b>      | 1,190                             | 56%        | 490                               | 23%        | 1,670               | 440                       | 21%        |
| Bago         | <b>5,010</b>      | 1,780                             | 35%        | 2,440                             | 49%        | 4,210               | 800                       | 16%        |
| Magway       | <b>7,380</b>      | 1,480                             | 20%        | 3,990                             | 54%        | 5,480               | 1,910                     | 26%        |
| Mandalay     | <b>4,810</b>      | 2,180                             | 45%        | 2,460                             | 51%        | 4,640               | 180                       | 4%         |
| Mon          | <b>1,240</b>      | 700                               | 57%        | 500                               | 40%        | 1,200               | 40                        | 3%         |
| Rakhine      | <b>5,120</b>      | 940                               | 18%        | 1,340                             | 26%        | 2,290               | 2,830                     | 55%        |
| Yangon       | <b>1,610</b>      | 640                               | 40%        | 740                               | 46%        | 1,380               | 230                       | 14%        |
| Shan         | <b>15,650</b>     | 5,070                             | 32%        | 9,080                             | 58%        | 14,140              | 1,510                     | 10%        |
| Ayeyarwady   | <b>4,970</b>      | 1,060                             | 21%        | 2,350                             | 47%        | 3,410               | 1,560                     | 31%        |
| <b>Total</b> | <b>69,090</b>     | <b>20,460</b>                     | <b>30%</b> | <b>33,640</b>                     | <b>49%</b> | <b>54,090</b>       | <b>14,990</b>             | <b>22%</b> |

Source: ADB TA-8788

39. The Core Rural Road Networks in each township will be identified in the course of 2017. The CRRNs will be prepared by DRD and MOBA staff in collaboration with village tract leaders, and will be submitted to the township development committees and the state/regional governments for approval. The CRRN identification will be completed by 31 December 2017, and all identified CRRN roads will be entered into a rural road database. This database will identify the different existing and planned CRRN roads and their characteristics, as well as the villages connected by each road, allowing for proper monitoring of the progress of connecting all villages and of the status of the core rural road network.

<sup>10</sup> ADB TA-8788: *Core Rural Road Networks in Myanmar – A pilot study in 14 townships*. Asian Development Bank, 2016.

**Figure 5 Estimated CRRN lengths (miles)**



## 7. Investment needs

40. **Estimated road construction and upgrading costs.** To achieve the objective of connecting at least 80% of all registered villages in each state/region by an all-season road, a large portion of the existing dry-season CRRN roads will need to be upgraded to all-season standard and several new CRRN roads will need to be constructed and upgraded to all-season standard. The secondary objective of ensuring that 90% of all GAD registered villages in each state/region have at least dry-season road access, will require additional new construction to dry-season standard in some states/regions. In total, it is estimated that just under 26,000 miles of existing dry-season CRRN roads will need to be upgraded to an all-season standard, that some 2,400 miles of new CRRN roads will need to be constructed and upgraded to an all-season standard to complete the all-season connection of 80% of villages in each state/region, and that a further 4,300 miles of new construction to a dry-season standard will be required to ensure that a further 10% of villages in each state/region have at least dry-season access. Exact upgrading and construction needs will be determined once the CRRN has been identified for each township.

41. The total costs of construction and upgrading of the core rural road network to connect at least 90% of all existing registered villages by road, including connecting at least 80% of all registered villages by all-season rural road or higher-level road, is estimated to be approximately US\$ 2.5 billion (MMK 3,400 billion). This includes US\$ 2.0 billion for upgrading the existing dry-season CRRN roads to all-season standard, US\$ 131 million for the construction of new CRRN roads to earthen standard (excluding costs of land acquisition), US\$ 199 million for upgrading approximately a third of these new CRRN roads to an all-season standard, and US\$ 226 million for upgrading existing timber bridges in the CRRN (note that this does not include the costs of new bridges that may be required in existing or new CRRN roads<sup>11</sup>). All costs are based on DRD unit rates with a 30% markup (this is in line with recent costs of works contracted out under development partner projects). It must be noted that the upgrading costs are based on unsealed macadam standard, and do not take account of possible other surface types that may be applied.

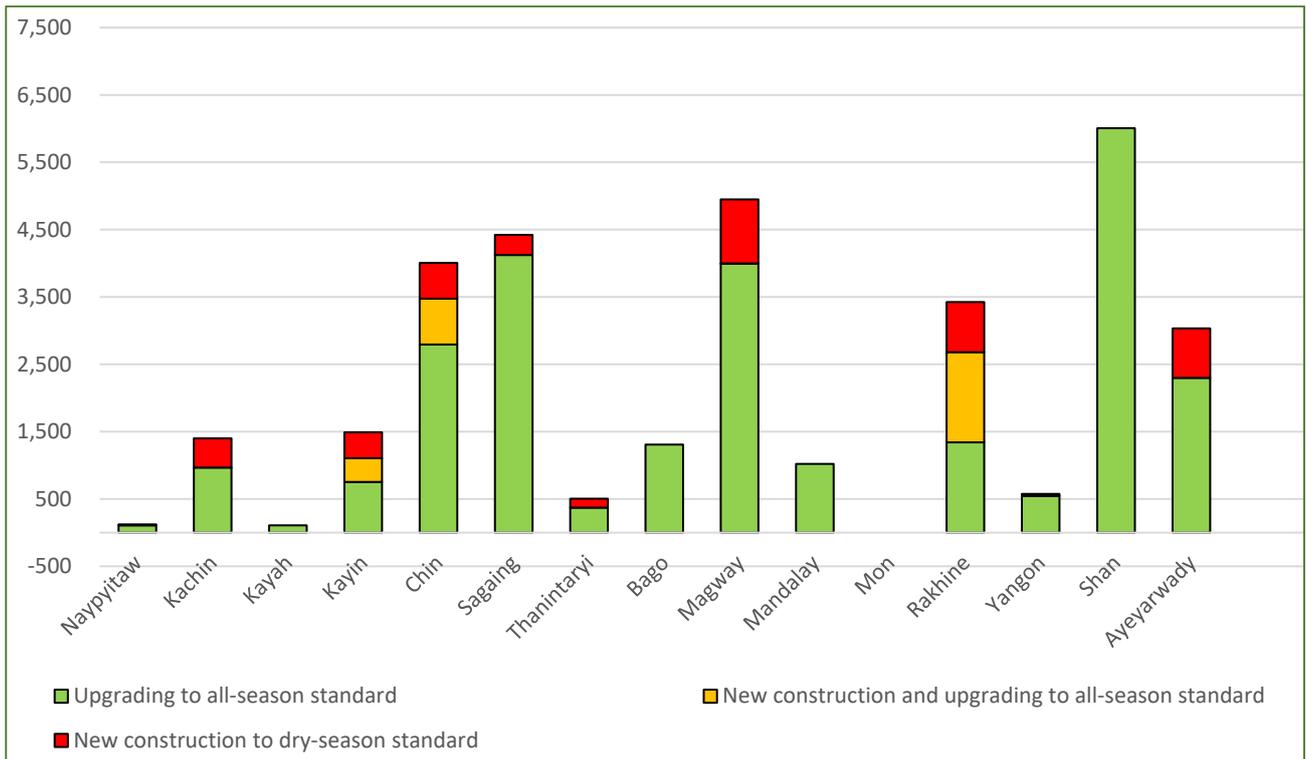
**Table 6** Estimated 2017-2030 CRRN requirements for upgrading and construction

| State/Region | Upgrading existing CRRN roads to all-season standard |              | Constructing new CRRN roads to dry-season standard |            | Upgrading new CRRN roads to all-season standard |            | Upgrading existing CRRN timber bridges |            | Total \$ million |
|--------------|--|--------------|--|------------|---|------------|--|------------|------------------|
|              | miles  | \$ million   | miles  | \$ million | miles   | \$ million | feet                                   | \$ million |                  |
| Naypyitaw    | 109  | 7            | 14   | 0          | -   | -          | 3,347                                  | 3          | <b>11</b>        |
| Kachin       | 967  | 89           | 434  | 11         | -   | -          | 6,746                                  | 6          | <b>106</b>       |
| Kayah        | 109  | 9            | -  | -          | -   | -          | 2,520                                  | 2          | <b>12</b>        |
| Kayin        | 754  | 48           | 736  | 11         | 353   | 23         | 3,473                                  | 3          | <b>85</b>        |
| Chin         | 2,795  | 255          | 1,212  | 25         | 680   | 62         | 10,478                                 | 10         | <b>352</b>       |
| Sagaing      | 4,123  | 256          | 299  | 5          | -   | -          | 58,483                                 | 56         | <b>317</b>       |
| Tanintharyi  | 372  | 31           | 132  | 3          | -   | -          | 5,602                                  | 5          | <b>39</b>        |
| Bago         | 1,307  | 116          | -  | -          | -   | -          | 33,911                                 | 33         | <b>148</b>       |
| Magway       | 3,994  | 240          | 955  | 16         | 4   | 0          | 12,743                                 | 12         | <b>268</b>       |
| Mandalay     | 1,022  | 61           | -  | -          | -   | -          | 17,482                                 | 17         | <b>77</b>        |
| Mon          | -  | -            | -  | -          | -   | -          | 4,784                                  | 5          | <b>5</b>         |
| Rakhine      | 1,341  | 114          | 2,085  | 46         | 1,339   | 114        | 7,201                                  | 7          | <b>281</b>       |
| Yangon       | 544  | 74           | 30   | 1          | -   | -          | 7,008                                  | 7          | <b>81</b>        |
| Shan         | 6,006  | 440          | -  | -          | -   | -          | 24,750                                 | 24         | <b>463</b>       |
| Ayeyarwady   | 2,299  | 240          | 734  | 14         | -   | -          | 36,627                                 | 35         | <b>288</b>       |
| <b>Total</b> | <b>25,741</b>  | <b>1,979</b> | <b>6,632</b>                                       | <b>131</b> | <b>2,376</b>                                    | <b>199</b> | <b>235,155</b>                         | <b>226</b> | <b>2,535</b>     |

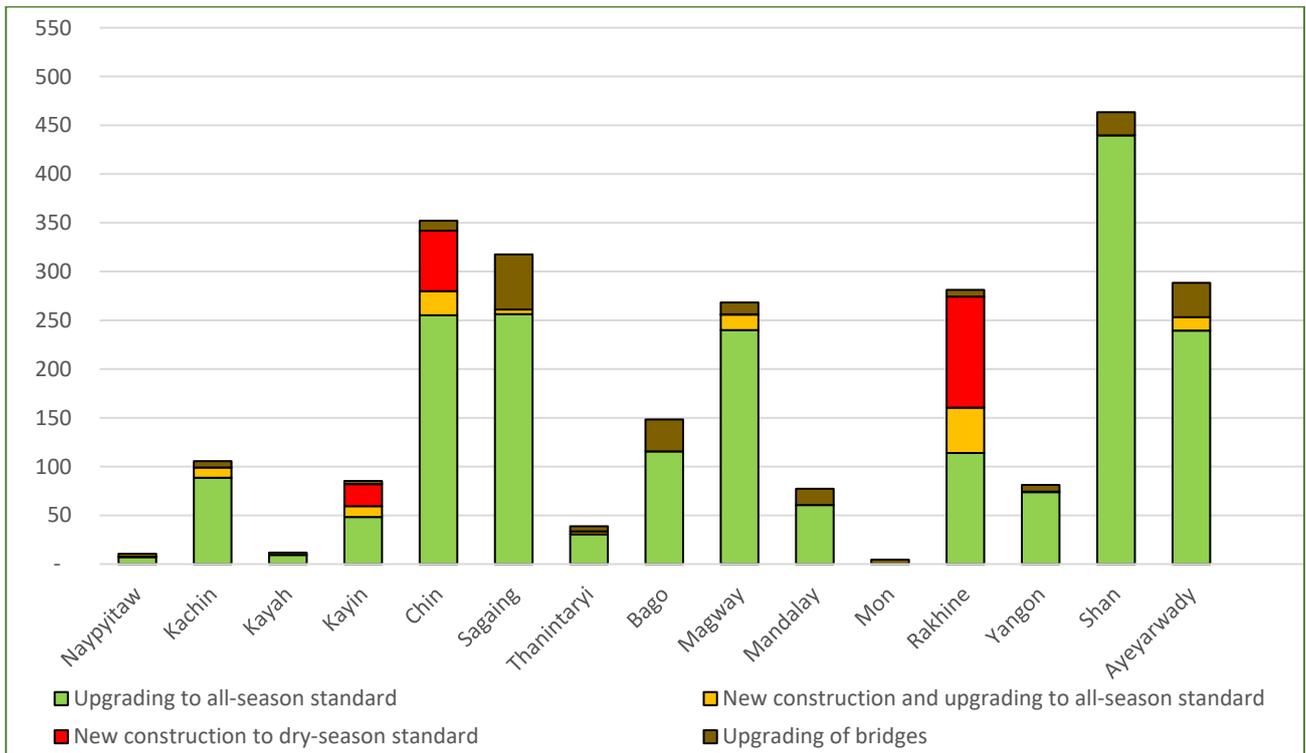
Source: ADB TA-8788

<sup>11</sup> The exact cost will become evident once the CRRN has been identified for each township, including bridge upgrading and construction needs.

**Figure 6 Estimated 2017-2030 CRRN upgrading and construction lengths (miles)**



**Figure 7 Estimated 2017-2030 CRRN investment needs (US\$ million)**



42. This investment of US\$ 2.5 billion will result in over 48,500 miles of CRRN roads having an all-season standard, providing all-season access to approximately 33,500 villages and 19.8 million rural people. Existing higher-level roads will provide access to an additional 12,400 villages and 9.4 million people. A further 12,200 miles of existing and new dry-season CRRN roads will provide dry-season road access to an additional 6,700 villages and 2.7 million rural people. By 2030, 88% of the total required CRRN will have been completed to at least dry-season standard, resulting in 92% of all registered villages and 95% of the rural population having road access. Approximately 70% of the

total required CRRN will have an all-season standard, resulting in 80% of all registered villages and 87% of the rural population having all-season access<sup>12</sup>.

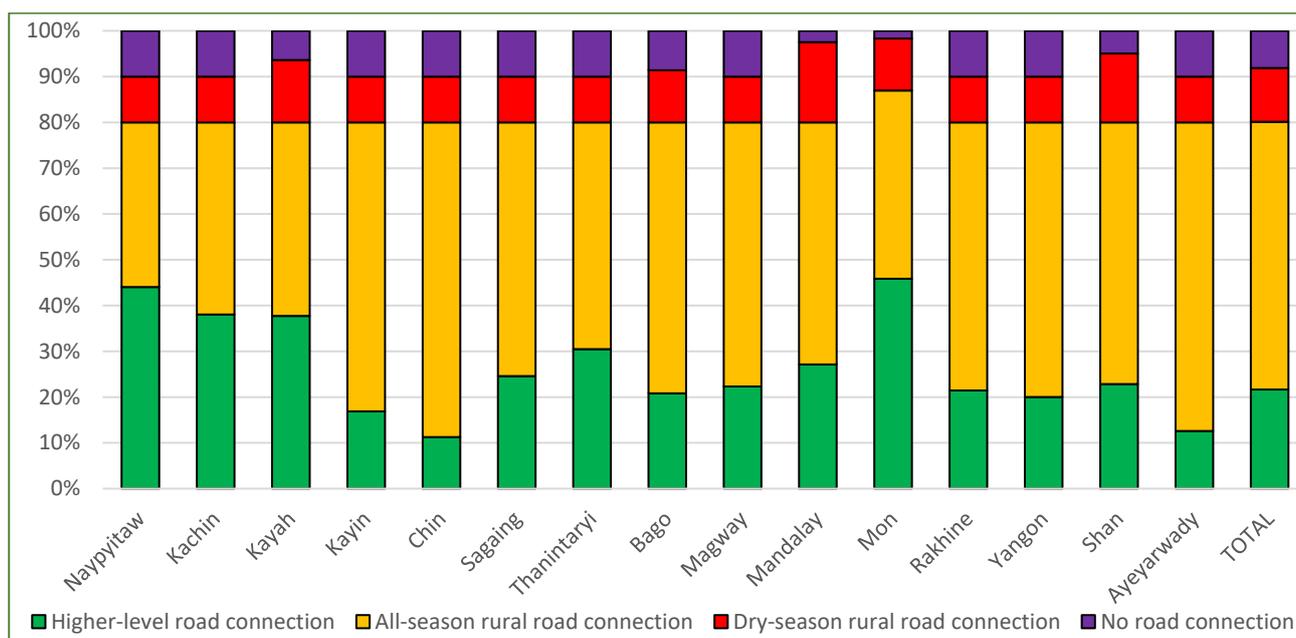
**Table 7 Estimated CRRN and access status by 2030**

| State/Region | Higher-level road or all-season rural road |               |                | Dry-season rural road |              |                | Unconnected by road |              |                |
|--------------|--|---------------|----------------|-----------------------|--------------|----------------|---------------------|--------------|----------------|
|              | CRRN miles                                 | villages      | million people | CRRN miles            | villages     | million people | CRRN miles          | villages     | million people |
| Naypyitaw    | 599  | 630           | 0.69           | 125                   | 79           | 0.04           | 158                 | 79           | 0.04           |
| Kachin       | 1,978                                      | 940           | 0.98           | 464                   | 118          | 0.02           | 470                 | 118          | 0.01           |
| Kayah        | 582  | 401           | 0.20           | 118                   | 68           | 0.01           | 80                  | 32           | 0.01           |
| Kayin        | 2,146                                      | 1,534         | 1.10           | 384                   | 192          | 0.04           | 384                 | 192          | 0.02           |
| Chin         | 3,656                                      | 1,064         | 0.33           | 532                   | 133          | 0.03           | 532                 | 133          | 0.01           |
| Sagaing      | 6,358                                      | 4,764         | 3.84           | 1,431                 | 596          | 0.25           | 1,191               | 596          | 0.30           |
| Tanintharyi  | 1,558                                      | 808           | 0.74           | 245                   | 101          | 0.09           | 303                 | 101          | 0.08           |
| Bago         | 3,083                                      | 4,950         | 3.07           | 1,131                 | 706          | 0.23           | 798                 | 532          | 0.38           |
| Magway       | 5,482                                      | 3,803         | 2.68           | 951                   | 475          | 0.45           | 951                 | 475          | 0.17           |
| Mandalay     | 3,198                                      | 3,823         | 3.58           | 1,438                 | 838          | 0.36           | 177                 | 118          | 0.09           |
| Mon          | 700  | 994           | 1.31           | 500                   | 130          | 0.07           | 38                  | 19           | 0.02           |
| Rakhine      | 3,624                                      | 2,982         | 1.51           | 745                   | 373          | 0.14           | 745                 | 373          | 0.06           |
| Yangon       | 1,184                                      | 1,614         | 1.53           | 227                   | 202          | 0.07           | 202                 | 202          | 0.11           |
| Shan         | 11,072                                     | 8,112         | 3.43           | 3,070                 | 1,526        | 0.20           | 1,506               | 502          | 0.17           |
| Ayeyarwady   | 3,354                                      | 9,442         | 4.18           | 788                   | 1,180        | 0.74           | 826                 | 1,180        | 0.32           |
| <b>Total</b> | <b>48,573</b>                              | <b>45,862</b> | <b>29.18</b>   | <b>12,152</b>         | <b>6,715</b> | <b>2.72</b>    | <b>8,360</b>        | <b>4,651</b> | <b>1.77</b>    |
| Percentage   | <b>70%</b>                                 | <b>80%</b>    | <b>94%</b>     | <b>18%</b>            | <b>12%</b>   | <b>8%</b>      | <b>12%</b>          | <b>8%</b>    | <b>5%</b>      |

Source: ADB TA-8788

43. The CRRN will not yet be completed by 2030, with over 8,000 miles of new construction still required to connect the remaining 4,650 villages. However, this will only affect an estimated 1.8 million rural people (5% of the rural population). Providing road access to these remaining 1.8 million people can only be achieved after 2030.

**Figure 8 Expected 2030 village access levels (%)**



<sup>12</sup> This assumes that higher level roads will also be brought to an all-season standard.

## 8. Sustainability and maintenance

44. **Sustainability.** To ensure the sustainability of the core rural road network and to protect against climate impacts, climate resilient and sustainable design standards will be applied. After construction and upgrading works have been completed, maintenance will be carried out in all CRRN roads with the aim of further increasing the sustainability and lifespan of the roads. This will include annual routine maintenance aimed at avoiding damage, complemented by periodic maintenance every few years to renew the road surface and carry out spot repairs.

45. **Routine maintenance.** Routine maintenance includes the cleaning and clearing of the different road elements to ensure they function properly, as well as small repairs to the road surface and structures. Particular attention will be given to clearing the drainage system and avoiding erosion, clearing any landslides or other obstacles on the road, and repairing small damages to the road surface and any structures that could lead to more significant damages.

46. Routine maintenance works in rural roads will be contracted out to community-based road maintenance groups that have been formed and trained to carry out these maintenance activities. These road maintenance groups will receive remuneration for this service. In the case of sealed roads or damages to concrete or steel structures, the routine repairs will be contracted out to private sector contractors who have the required skills and equipment. To reduce management costs and the need for frequent inspections, contracts will generally be paid on a performance basis, against the resulting condition of the road and its compliance with predefined performance standards.

47. **Periodic maintenance.** Periodic maintenance will be carried out every few years to repair and rejuvenate the road, especially the road surface. This may include regravelling, spot repairs of macadam or concrete roads, bituminous seals or overlays. This will be complemented by spot repairs where necessary, including back-strengthening of road sections that are vulnerable to climate impacts. Periodic maintenance works will be contracted out to private sector contractors who have the required experience and equipment. Contracts will generally be paid on a volume basis, against the volume of work completed.

48. **Maintenance planning and prioritization.** All CRRN roads will receive routine maintenance, except where these are not in a maintainable condition (requiring rehabilitation<sup>13</sup>) or where upgrading works are planned. DRD and MOBA, through their local offices, will award (performance-based) routine maintenance contracts to road maintenance groups or maintenance contractor each year. These contracts may cover single roads or packages of several roads, and even entire networks within a specific area.

49. To determine the additional maintenance needs beyond general routine maintenance, DRD and MOBA staff will carry out a rapid condition assessment at the end of the rainy season to determine which roads require periodic maintenance and if any roads require emergency maintenance aimed at opening up the road and making the road passable, or spot improvements to address vulnerable sections.

50. Where available funding is insufficient to cover all maintenance needs, emergency maintenance will receive priority, followed by routine maintenance and periodic maintenance. Where necessary, required periodic maintenance and spot improvement works will be ranked based on the population served per mile of road (dividing the populations of the villages connected by each road by the length of those roads).

51. **Estimated road maintenance costs.** The all-season CRRN roads will require periodic maintenance every 5 years or so. With an average minimum cost of US\$10,000 per mile every 5 years, the average annual cost for periodic maintenance of the existing all-season CRRN roads will start at US\$ 40 million/year and gradually increase to approximately US\$ 100 million/year as the

---

<sup>13</sup> Rehabilitation is included under upgrading and is not treated as a maintenance activity.

length of all-season CRRN roads increases. The total costs of periodic maintenance for the 15-year period up to 2030 is estimated to be just over US\$ 1.0 billion.

52. In addition, the routine maintenance of all existing CRRN roads (both all-season and dry-season standard) at an average minimum cost of US\$ 400 per mile every year will require an investment of US\$ 330 million over the 15-year period, with an average annual cost of just over US\$ 20 million per year.

53. Total maintenance costs over the 15-year strategy period are estimated to be in the order of US\$ 1.4 billion, growing from just over US\$ 60 million per year currently to US\$ 120 million per year in 2030. It is important that allocations to rural road maintenance are in line with these needs to ensure that roads do not deteriorate and that the achieved access levels are sustained.

**Table 8 Estimated 2016-2030 CRRN requirements for maintenance**

| State/Region | CRRN 2016           |                     | CRRN 2030           |                     | Periodic maintenance<br>\$ million | Routine maintenance<br>\$ million |
|--------------|---------------------|---------------------|---------------------|---------------------|------------------------------------|-----------------------------------|
|              | All-season<br>miles | Dry-season<br>miles | All-season<br>miles | Dry-season<br>miles |                                    |                                   |
| Naypyitaw    | 490                 | 220                 | 599                 | 125                 | 16                                 | 4                                 |
| Kachin       | 1,011               | 997                 | 1,978               | 464                 | 45                                 | 12                                |
| Kayah        | 472                 | 228                 | 582                 | 118                 | 16                                 | 4                                 |
| Kayin        | 1,039               | 754                 | 2,146               | 384                 | 48                                 | 12                                |
| Chin         | 182                 | 2,795               | 3,656               | 532                 | 58                                 | 20                                |
| Sagaing      | 2,235               | 5,255               | 6,358               | 1,431               | 129                                | 45                                |
| Tanintharyi  | 1,186               | 485                 | 1,558               | 245                 | 41                                 | 10                                |
| Bago         | 1,776               | 2,438               | 3,083               | 1,131               | 73                                 | 25                                |
| Magway       | 1,484               | 3,994               | 5,482               | 951                 | 104                                | 33                                |
| Mandalay     | 2,176               | 2,460               | 3,198               | 1,438               | 81                                 | 28                                |
| Mon          | 700                 | 500                 | 700                 | 500                 | 21                                 | 7                                 |
| Rakhine      | 944                 | 1,341               | 3,624               | 745                 | 69                                 | 18                                |
| Yangon       | 640                 | 741                 | 1,184               | 227                 | 27                                 | 8                                 |
| Shan         | 5,066               | 9,077               | 11,072              | 3,070               | 242                                | 85                                |
| Ayeyarwady   | 1,055               | 2,353               | 3,354               | 788                 | 66                                 | 20                                |
| <b>Total</b> | <b>20,455</b>       | <b>33,637</b>       | <b>48,573</b>       | <b>12,152</b>       | <b>1,035</b>                       | <b>332</b>                        |

Source: ADB TA-8788

54. **Maintenance funding.** Maintenance of CRRN roads will receive priority over the upgrading of CRRN roads to an all-season standard or the construction of new CRRN roads. For this purpose, a minimum of 20% of the available rural road funding will be reserved for maintenance. As the existing CRRN is upgraded to an all-season standard and new CRRN roads are constructed, the maintenance costs will increase (especially for the periodic maintenance of all-season roads), while the required investments for upgrading and new construction will gradually decrease. The funding allocation for maintenance will therefore need to be gradually increased, with an estimated minimum of 35% of available rural road funding reserved for maintenance by 2030.

## 9. Financing

55. The total funding needs for the 15-year strategy period come to US\$ 3.9 billion, including US\$ 2.5 billion for upgrading and new construction of roads and bridges, and US\$ 1.4 billion for maintenance. These funding needs will be covered by financing from three main sources.

56. **Union budget.** The main source of funding for rural roads is currently the union budget allocations made to both MOALI (DRD) and MOBA. This is expected to continue to form the main source of financing for the implementation of this strategy. The union budget allocations for DRD have averaged nearly MMK 160 billion per year over the past three years, while for MOBA the union budget allocations to rural roads have averaged just over MMK 30 billion per year. The average funding from the union budget to rural roads over the past three years therefore amounts to approximately US\$ 150 million per year (MMK 190 billion). It is expected that these allocations can be sustained for the strategy period, but that it will be difficult to significantly increase these allocations due to the needs in other sectors that will put a strain on the union budget. The union budget is expected to provide a total funding of at least US\$ 2.1 billion for the period 2017-2030, forming just over half the required funding.

**Table 9 Annual budget allocations to rural roads and bridges for DRD and MOBA**

| Fiscal year    | DRD<br>MMK million | MOBA<br>MMK million |
|----------------|--------------------|---------------------|
| 2014-2015      | 199,334            | N/A                 |
| 2015-2016      | 174,317            | 35,270              |
| 2016-2017      | 102,980            | 31,073              |
| <b>Average</b> | <b>158,877</b>     | <b>33,171</b>       |

Source: DRD and MOBA

57. **Road Fund.** To increase the amount of funding available to DRD and MOBA, the Government of Myanmar will create a Road Fund. This Road Fund will provide financing for the rural road network managed by DRD and MOBA as well as for the higher-level trunk road network managed by MOC and the urban road networks managed by City Development Councils and Township Development Councils. The Road Fund will obtain its main revenue from road user charges, including existing tolls and vehicle fees, as well as new road user charges that will be introduced with the creation of the Road Fund, specifically a fuel tax or levy. The Government of Myanmar will create the Road Fund by 2020, including a fuel tax or levy to finance it.

58. Through the Road Fund, an additional US\$ 1.0 billion (25% of the required funding) will be made available to DRD and MOBA for the management of the rural road network during the period from 2020 (when the Road Fund and the fuel tax are introduced) to 2030. Given current fuel consumption and expected increases in the coming years, a fuel levy of 1.5-2.0 dollar cents per liter (MMK 20-25 per liter) would already generate enough revenue to cover the required increase in rural road funding for DRD and MOBA. The total fuel levy will be higher in order to also cover the allocations for higher-level roads and urban roads.

59. **Development partners.** The Government of Myanmar will request the development partners to provide financial support to cover the remaining funding needs for the implementation of the strategy. Development partners are increasingly providing funding for rural roads and bridges, and currently include the Asian Development Bank (ADB), the Japanese International Cooperation Agency (JICA), the German development bank (KfW)<sup>14</sup>, and the World Bank. Others may join in the future. Over the coming 15 years, the Government of Myanmar will request development partners to provide a total of US\$ 800 million in funding to help fill the gap for financing this strategy. This requires an average annual financing from development partners of just over US\$ 60 million per year,

<sup>14</sup>Kreditanstalt für Wiederaufbau.

growing from approximately US\$ 40 million per year initially to approximately US\$ 85 million per year by 2030.

**Table 10 Expected funding levels by source of funding**

| Source                         | Budget<br>US\$ million |
|--------------------------------|------------------------|
| Union budget                   | 2,100                  |
| Road Fund                      | 1,000                  |
| Development Partners           | 800                    |
| <b>Total estimated funding</b> | <b>3,900</b>           |

60. **State and Regional governments.** State and Regional governments are increasingly investing in roads. Up till now these investments have been in trunk roads managed by MOC. It is expected that states/regions will also start investing in rural roads in the coming 15 years. However, this funding from states/regions has not been considered in the financing of this strategy as it may not follow the criteria for selection and prioritization defined for investments made by the Government of Myanmar. These state/regional contributions will therefore complement the funding levels described above, further expanding the scope and impact in terms of the percentage and number of villages and rural people connected by all-season and dry-season rural roads and allowing for investments in non-CRRN roads.

61. **Budget scenarios.** The expected funding of US\$ 3.9 billion up to 2030 will allow the main strategy objective to be achieved of connecting 80% of villages by all season road. This will ensure that approximately 87% of the rural population in Myanmar is provided with all-season road access. This is a significant improvement from the current situation where only 50% of villages and 58% of the rural population are connected by all-season rural roads or higher-level roads. This impact is very much dependent on the expected funding levels being realized in practice. Any reduction in the funding levels will reduce the number of villages and the number of rural people that will be provided with all-season road access. Similarly, an increase in available funding will increase the impact and expand all-season road access to a greater number of villages and rural people.

62. Rural road allocations from the union budget may be reduced in favor of other sectors. The Road Fund may not be created or its revenue and allocation to rural roads may be lower than foreseen. Funding from development partners may prove to be lower than expected. A reduction in the available rural road funding of US\$1.0 billion between now and 2030 will result in the number of villages connected by all-season roads being reduced by 10%, and the number of rural people connected by all-season roads being reduced by 8% (nearly 2.5 million people). A budget of only US\$ 150 million per year (equal to the current allocation from the union budget), would only allow 60% of all registered villages to be connected by all-season roads (20% less than the target of this strategy), reducing the number of people connected by all-season road by 15% (approximately 5 million people).

63. Rural road allocations from the union budget, from the Road Fund or from the development partners may also turn out to be higher than expected. State/regions may allocate additional funding to the CRRN. This may lead to significantly higher budgets becoming available in the period up to 2030, allowing the impact to be increased. An additional allocation of US\$ 1.0 billion would allow up to 90% of villages to be connected by all-season roads, and 94% of the rural population to be provided with all-season road access (an additional 2.5 million people).

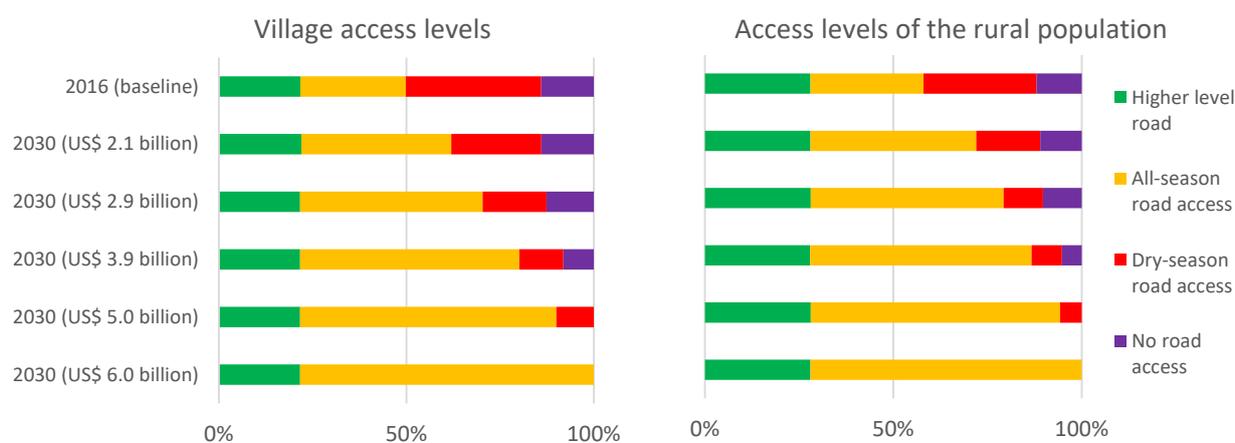
64. Connecting all villages and the entire rural population by all-season road would require a total estimated budget of US\$6.0 billion, 55% more than what is expected to be available under this strategy. The following table shows the impacts of these different budget scenarios. The scenarios all assume an additional 10% of villages will be connected by dry season road (except where all villages are connected by all-season roads).

**Table 11 Impact of different budget scenarios on access levels**

| Investment strategy                  | Budget<br>2016-2030<br>US\$<br>billion | Higher-level road<br>or all-season CRRN |             | Dry-season CRRN |             | No road       |             |
|--------------------------------------|--|---|-------------|-----------------|-------------|---------------|-------------|
|                                      |  | %<br>villages                           | %<br>people | %<br>villages   | %<br>people | %<br>villages | %<br>people |
| 2016 situation                       | -                                      | 50%                                     | 58%         | 36%             | 30%         | 14%           | 12%         |
| 2030 situation (60% villages)        | 2.1                                    | 62%                                     | 72%         | 24%             | 17%         | 14%           | 11%         |
| 2030 situation (70% villages)        | 2.9                                    | 70%                                     | 79%         | 17%             | 10%         | 13%           | 10%         |
| <b>2030 situation (80% villages)</b> | <b>3.9</b>                             | <b>80%</b>                              | <b>87%</b>  | <b>12%</b>      | <b>8%</b>   | <b>8%</b>     | <b>5%</b>   |
| 2030 situation (90% villages)        | 5.0                                    | 90%                                     | 94%         | 10%             | 6%          | -             | -           |
| 2030 situation (100% villages)       | 6.0                                    | 100%                                    | 100%        | -               | -           | -             | -           |

Source: ADB TA-8788

**Figure 9 Village and rural population access levels**



## 10. Planning and prioritization

65. **Township level planning.** Based on the identified CRRNs in each township, rural road investment plans will be prepared at township level. These investment plans will be consolidated at state/regional and at national level. The main plan will be the investment plan up to 2030, identifying all the investment needs to provide at least 80% of all registered villages in a township with all-season road access. This will be complemented by 5-year investments plans to identify current investments in support of the 2030 investment plan. The plans will include construction of new CRRN roads to link unconnected villages, upgrading of existing CRRN roads from dry-season to all-season standard, and allocations for maintenance of the CRRN.

66. **Prioritization of CRRN roads.** Under this *National Strategy for Rural Roads and Access*, the Government of Myanmar will target investments in rural roads exclusively towards CRRN roads with the aim of achieving the strategy objective of connecting at least 80% of registered villages by all-season road at the lowest cost and within the shortest timeframe. The identified CRRN list will form the basis for any rural road investments by the Government of Myanmar, including those financed through loans from development partners. Rural roads that have not been identified as being part of the CRRN, will not be eligible for receiving funding from the Government of Myanmar until all CRRN roads have been constructed and upgraded to an all-season standard.

67. **Prioritization of villages.** This strategy aims to connect at least 80% of the registered villages in each state/region by all-season roads by 2030. Investments will be spread over several years, by the end of which the grand majority of villages will have all-season road access. However, some villages will only receive dry-season road access or will continue to lack road access even after 2030. To ensure transparency in the selection of the villages to receive all-season road access during the strategy period, and to maximize the number of rural people to be connected by all-season road, the construction and upgrading of all-season road connections to the different villages will be prioritized based on the size of the population of each village.

- The **first priority** will be given to registered villages with more than 1,000 people. This involves 12% of all existing registered villages, two-thirds of which are already connected by a higher-level road or an all-season rural road. These larger villages will all be connected by all-season road by 2020 through the upgrading of existing dry-season CRRN roads.
- The **second priority** will be given to villages with more than 500 people. This involves 32% of all existing registered villages, 85% of which are already connected by road and 54% of which are connected by a higher-level road or an all-season rural road. At least 95% of these medium-sized villages will be connected by all-season road by 2025 through the upgrading of existing dry-season CRRN roads and limited construction of new CRRN roads.
- The **third priority** will be given to registered villages with more than 250 people. This involves 36% of all existing registered villages, 85% of which are already connected by road and 47% of which are connected by higher-level roads or all-season roads. At least 75% of these smaller villages will be connected by all-season road by 2030 through the upgrading of existing dry-season CRRN roads and the construction of new CRRN roads.
- The **fourth priority** will be given to the registered villages with less than 250 people. This involves 20% of all existing registered villages, 20% of which lack road access and only 38% of which are connected by higher-level roads or all-season rural roads. At least 50% of these smallest villages will be connected by all-season road by 2030 through the construction of new CRRN roads and the upgrading of existing dry-season CRRN roads.

68. Within each category of villages, DRD and MOBA in consultation with the township development committees and the state/regional governments will be responsible for selecting the villages to be prioritized each year. Use will be made of socioeconomic criteria to introduce a ranking of road investments within each category. A common set of socioeconomic criteria will be developed

by the Government of Myanmar in collaboration with the states and regions and with the support of development partners. Villages from a lower category should only be selected if the villages from the higher categories have all been connected by all-season road.

69. By 2020, all villages with more than 1,000 people will be connected by all-season roads. By 2025, at least 95% of villages with more than 500 people will be connected by all-season roads. By 2030, 80% of registered villages in each state/region will be connected by all-season road, including all villages with more than 500 people, at least 75% of villages with more than 250 people, and approximately 50% of villages with less than 250 people.

70. **Maintenance.** Timely maintenance of all existing CRRN roads, both all-season and dry-season, is required to avoid accelerated deterioration and costly repairs. In the allocation of funding, priority will therefore be given to maintenance of all existing CRRN roads, irrespective of the size of the villages they connect.

**Figure 10** Prioritization of villages



71. **New construction.** New construction of prioritized CRRN roads will require land acquisition, which is the responsibility of the states/regions and the villages concerned. Land may be purchased by the state and regional governments or may be donated by the villages benefitting from the proposed road. Land acquisition will not be financed by the Government of Myanmar. New construction works will only be financed under this strategy if the required land acquisition for the proposed alignment has been completed by the states/regions and villages concerned. Where land acquisition has not yet been completed, construction may be postponed and funding may be allocated to connecting lower priority villages. Once the land acquisition has been completed, the concerned road will become eligible for financing under this strategy.

72. New construction will only be to a dry-season standard with the aim of providing road access to at least 90% of all villages in each state/region by 2030. New construction to an all-season standard will only be carried out where this is required to achieve the main strategy objective of connecting at least 80% of all villages in each state/region by all-season road, or where this concerns high priority villages with more than 500 people.

## 11. Budget allocation

73. **Budget allocation to states and regions.** The available funding from the union budget is currently shared amongst the different states and regions based on the rural population of each state/region, with additional funding sometimes allocated to very poor states/regions. The investment needs presented in the previous sections show that the required investment varies strongly by state/region depending on the existing village access levels, the number of villages and the distance between them. Although states/regions with larger rural populations will generally require larger investments, this is not necessarily a direct relationship as can be seen in the table below.

74. Future allocations under this strategy from the union budget and the proposed Road Fund will therefore take account of existing village access levels in the different states/regions and of the required investments<sup>15</sup> to achieve the strategy objectives of connecting at least 90% of villages in each state/region by road, with at least 80% of villages connected by all-season road. This will mean that a relatively larger portion of the available funding from the union budget will be allocated to those states/regions with lower village access levels and higher investment needs. This will ensure greater equitability between the different states and regions in terms of the level of access of the different villages and their respective rural populations. The table below shows how the share of the budget going to different areas will change slightly when the allocation also takes account of the investment needs instead of only the rural population size. The allocation may initially be based on the investment needs reflected in this strategy, but this will be gradually replaced by more exact investment estimations as identified in the definition of the CRRN for each township (to be completed by December 2017) and regularly updated as the CRRN is further constructed and upgraded.

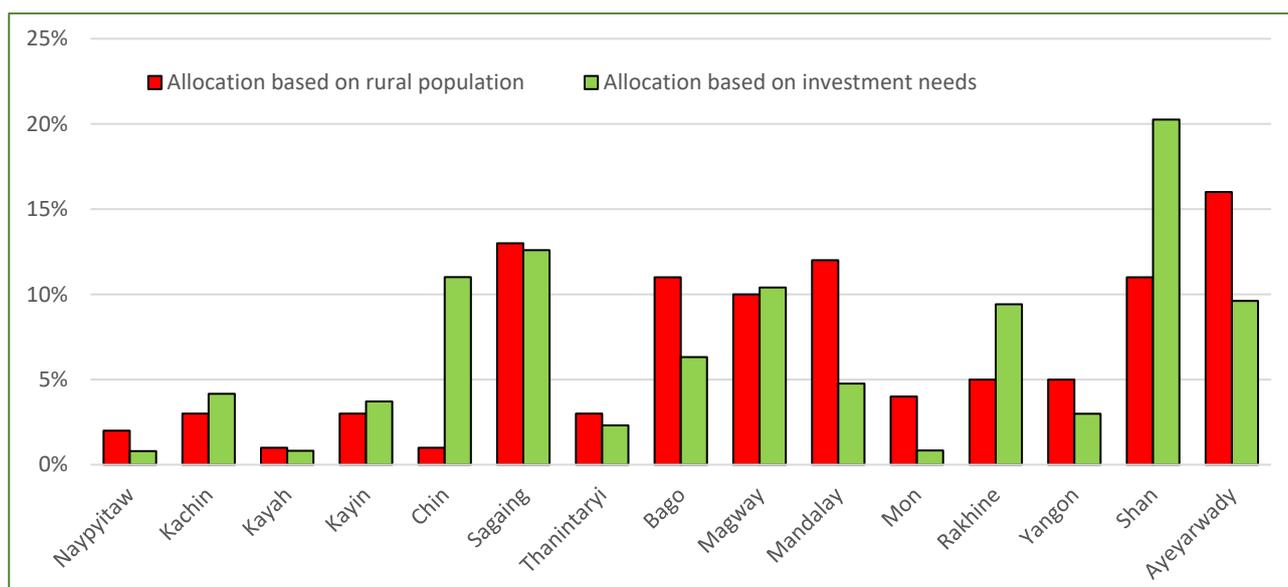
**Table 12 Estimated CRRN requirements**

| State/Region | Rural population  |             | Estimated investment needs |             |
|--------------|-------------------|-------------|----------------------------|-------------|
|              | people            | %           | US\$ million               | %           |
| Naypyitaw    | 772,153           | 2%          | 31                         | 1%          |
| Kachin       | 1,005,093         | 3%          | 162                        | 4%          |
| Kayah        | 214,209           | 1%          | 32                         | 1%          |
| Kayin        | 1,154,692         | 3%          | 145                        | 4%          |
| Chin         | 368,711           | 1%          | 430                        | 11%         |
| Sagaing      | 4,381,529         | 13%         | 491                        | 13%         |
| Tanintharyi  | 904,400           | 3%          | 90                         | 2%          |
| Bago         | 3,683,575         | 11%         | 246                        | 6%          |
| Magway       | 3,302,547         | 10%         | 406                        | 10%         |
| Mandalay     | 4,022,287         | 12%         | 186                        | 5%          |
| Mon          | 1,404,634         | 4%          | 33                         | 1%          |
| Rakhine      | 1,705,657         | 5%          | 368                        | 9%          |
| Yangon       | 1,708,332         | 5%          | 117                        | 3%          |
| Shan         | 3,798,554         | 11%         | 790                        | 20%         |
| Ayeyarwady   | 5,248,991         | 16%         | 375                        | 10%         |
| <b>Total</b> | <b>33,675,364</b> | <b>100%</b> | <b>3,902</b>               | <b>100%</b> |

Source: ADB TA-8788

<sup>15</sup> This takes account of the upgrading and construction needs, the road standards to be applied and the related unit costs, and also considers the size and makeup of the CRRN network and the impact on maintenance costs.

**Figure 11 Budget allocation by state/region**



75. Development partner funding will be for specific states/regions in line with the agreed project scope, and will serve to complement allocations from the union budget and the proposed Road Fund in those states/regions where access levels are low (in terms of the percentage of the villages or rural population that has been connected by an all-season road) and investment needs are high.

76. The annual allocations from the union budget, the Road Fund and from development partners will be determined by the *Regional Road & Bridge Implementation Committee* at national level (see also section 13), and approved by the national parliament.

77. **Budget allocation to townships.** At state/regional level, the available funding from DRD and MOBA is currently allocated to the different townships based on their rural population. Here also, the budget allocation will start taking account of village access levels of the different townships and the required investments to achieve the strategy objectives. Additional funding will be provided to townships where a high percentage of villages and rural people are not connected by all-season road and where investment needs are higher. This will ensure greater equitability between the different townships in terms of the level of access of the different villages and their respective rural populations. The allocation of the available rural road funding from the union budget, the proposed Road Fund and from development partners to the different townships will be decided and approved by the *Regional Road & Bridge Implementation Committee* after consultation with the *Regional Road & Bridge Supervision Committee* in each state/region (see also section 13).

78. **Budget allocation to CRRN roads.** Within each township, the budget allocation to the different roads will follow the investment plans and the prioritization and ranking criteria presented in this strategy. The available budget for the rural road sector in each township will be allocated first to the maintenance of existing CRRN roads. The budget allocation will subsequently follow the ranking of the villages according to their population size, with first priority given to villages with over 1,000 people, second priority to villages with over 500 people, third priority to villages with over 250 people, and fourth priority to villages with less than 250 people. Within each category of villages, the required investments will depend on the current level of access (whether the village has dry-season road access requiring upgrading, or no road access requiring new construction). Additional socioeconomic criteria will be developed to rank the road investments within each priority category. Investments by the Government of Myanmar will be limited to CRRN roads.

## 12. Monitoring and Key Performance Indicators

79. To monitor the progress in achieving the strategy objective of connecting at least 80% of all registered villages by all-season road and at least 90% of villages by any kind of road, use will be made of the following key performance indicators and targets. The baseline values are currently calculated based on the results of the village access level study. The baseline will be updated using exact data regarding the CRRN and its makeup that will be collected for all townships by 31 December 2017.

80. The 2030 final targets listed below have been defined based on the objectives of this strategy, with stepwise targets set for achievement in 2020 and 2025. These key performance indicators will be calculated on an annual basis in December each year using data collected at township level, and compared to these targets. The calculated indicators will be reported to the *Regional Road & Bridge Supervision Committees* at state/regional level, the *Regional Road & Bridge Implementation Committee* at national level, and the *Regional Road & Bridge Steering Committee* at national level, as well as the state/regional and national parliaments. The calculation and presentation of these indicators in December each year will allow the rural road funding and program for the following fiscal year to be adjusted where necessary, with the aim of achieving the stepwise and final targets of the strategy.

**Table 13 Key performance indicators for rural roads and access**

| Key Performance Indicator   | Baseline 2016* | Target 2020 | Target 2025  | Target 2030  |
|---|----------------|-------------|--------------|--------------|
| Percentage of registered villages connected by any kind of road   | 86%            | 88%         | 90%          | 92%          |
| Percentage of registered villages connected by all-season CRRN road or higher-level road                  | 50%            | 60%         | 70%          | 80%          |
| Percentage of registered villages > 1,000 people connected by all-season CRRN road or higher-level road   | 67%            | 100%        | 100%         | 100%         |
| Percentage of registered villages > 500 people connected by all-season CRRN road or higher-level road     | 55%            | 70%         | 95%          | 100%         |
| Percentage of registered villages > 250 people connected by all-season CRRN road or higher-level road     | 47%            | 56%         | 65%          | 75%          |
| Percentage of rural population in villages connected by road  | 88%            | 90%         | 92%          | 95%          |
| Percentage of rural population in villages connected by all-season rural road or higher-level road        | 58%            | 67%         | 77%          | 87%          |
| Percentage of villages served by public transport services  | N/A            | 60%         | 70%          | 80%          |
| Percentage of the total Core Rural Road Network that has been constructed to at least dry-season standard | 78%            | 81%         | 84%          | 88%          |
| Percentage of the total Core Rural Road Network that has been constructed to all-season standard          | 30%            | 40%         | 55%          | 70%          |
| Percentage of the existing Core Rural Road Network with an all-season standard                            | 38%            | 52%         | 66%          | 80%          |
| Length of rural roads upgraded  | 0 miles        | 9,000 miles | 18,000 miles | 28,000 miles |
| Length of rural roads constructed   | 0 miles        | 2,000 miles | 4,000 miles  | 6,500 miles  |

81. To facilitate the monitoring, a rural road database will be developed with regular data inputs from DRD and MOBA. This will include data on all CRRN roads, as well as data on the registered villages, their populations and their access levels. This database will be developed by December 2017 to incorporate the data on the identified CRRN in each township.

## 13. Institutional responsibilities

82. There are several institutions involved in the rural road sector. The most important of these are the Department of Rural Development (DRD) under the Ministry of Agriculture, Livestock and Irrigation (MOALI), and the Ministry of Border Affairs (MOBA). Important roles are also played by the Department of Highways (DOH) and Department of Bridges (DOB) under the Ministry of Construction (MOC), and the Road Transport Administration Department (RTAD) under the Ministry of Transport and Communications (MOTC). To improve the coordination between these different ministries and their departments, the following three committees were created in 2016: a national level *Regional Road & Bridge Steering Committee*, a national level *Regional Road & Bridge Implementation Committee*, and state/regional level *Regional Road & Bridge Supervision Committees*. These committees are together responsible for implementing this *National Strategy for Rural Roads and Access*.

83. **Ministry of Agriculture, Livestock and Irrigation (MOALI)**. Under MOALI, rural roads are managed by the Department of Rural Development (DRD) through its Roads & Bridges Division. DRD has offices at state/regional level, district level, and in each township, which look after the different sectors that DRD is responsible for, including rural roads.

84. **Ministry of Border Affairs (MOBA)**. MOBA works through Development Supervisory Offices (DSO) at state/regional, district and township level. These offices look after the different sectors that MOBA is responsible for, including rural roads.

85. **Regional Road & Bridge Steering Committee**. The *Regional Road & Bridge Steering Committee* is chaired by the ministers from the different ministries, and includes all the state/regional ministers of transport, the director generals for DRD and MOBA, and the permanent secretaries for MOC and MOTC. It is responsible for approving and issuing this *National Strategy for Rural Roads and Access* and for ensuring that its objectives are achieved. The Steering Committee will also be responsible for approving the multiannual investment plans, negotiating (multi)annual rural road financing levels, introducing the Road Fund, creating a National Rural Road Agency, and issuing the Rural Road Standards and Specifications.

86. **Regional Road & Bridge Implementation Committee**. The *Regional Road & Bridge Implementation Committee* is chaired by the permanent secretaries for MOC and MOTC and includes the director generals for DRD, RTAD, DOH, DOB and MOBA. It is responsible for preparing rural road standards, for quality control of rural road works, for coordinating and facilitating land acquisition, and for preparing progress reports regarding the rural road sector indicators. It will also be responsible for approving annual plans and budget allocations to the different states and regions.

87. **Regional Road & Bridge Supervision Committee**. The *Regional Road & Bridge Supervision Committees* exist in each state/region and are chaired by the State/Regional Minister for Transport. Other members include the state/regional director generals for DRD, DOH, MOBA and RTAD. This committee will be responsible for preparing the state/regional investment plan for rural roads in the different townships within each state/region, and for coordinating between the different ministries.

88. **Plan preparation and approval**. With support from village tract leaders, the township staff of DRD and MOBA will define the CRRN and prepare investment plans identifying the new construction, upgrading and maintenance works to be carried out each year in line with this strategy, and the required funding. The plans will be consolidated by the state/regional offices of DRD and MOBA, submitted to the state/regional governments and the *Regional Road & Bridge Supervision Committees* for consultation, and subsequently to the central government ministries and the *Regional Road & Bridge Implementation Committee* for approval.

89. **Financing**. DRD and MOBA will allocate the available financing from the union budget and the proposed Road Fund to the different states/regions according to the budget allocation criteria

presented in this strategy. The state/regional offices of DRD and MOBA will allocate the available rural road sector budgets to the different townships. These allocations will be complemented by development partner funding in some states/regions and townships. The allocation of available union budget, Road Fund and development partner funding to the different states and regions and their respective townships will be approved by the *Regional Road & Bridge Implementation Committee* at national level. At township level, the available rural road sector funding will be allocated in accordance with the investment plans and the prioritization criteria set out in this strategy.

90. **Procurement.** The implementation of all rural road works financed from the union budget and the proposed Road Fund will be outsourced to private sector contractors or community-based groups. Procurement will be carried out in line with *The Directive on Execution of Works by Contract* (2014, updated 2016) issued by the Ministry of Construction or any national procurement legislation that may replace it. DRD and MOBA will only have a very limited amount of equipment for in-house execution of emergency maintenance, which may be used for other maintenance works when available. However, DRD and MOBA will aim to carry out as much maintenance work as possible through outsourcing. Innovative contracting modalities will be introduced to facilitate procurement and the timely execution of maintenance works (e.g. performance-based maintenance contracts, term-based maintenance contracts, etc.).

91. **Supervision and quality control.** A three-tier system of supervision and quality control will be introduced. The township staff of DRD and MOBA will carry out regular inspection visits to check the quality and overall performance of the works before approving payments. This will be complemented by independent third-party quality control consultants that will visit at least 50% of all rural road projects during implementation. These consultants will be hired by the state/regional offices of DRD and MOBA, and will verify the regular quality control and supervision by township staff. Results of this state/regional quality control will be presented to the *Regional Road & Bridge Supervision Committees* on a three-monthly basis. Lastly, the national offices of DRD and MOBA will carry out a random sampling of rural road projects and carry out a quality control in at least 1% of all rural road projects. Results of this central level quality control together with a summary of the state/regional quality control will be presented to the *Regional Road & Bridge Implementation Committee* on a six-monthly basis.

92. **Research and Development.** DRD in collaboration with MOBA will set up a research and development unit that will be responsible for material testing, quality control, and the development and trialing of new standards. Laboratories will be set-up and proper procedures will be developed for material testing, quality control and trialing of new standards. Development partners will be requested to support the setting up of the laboratories and the development of procedures, to assist in the trialing and development of new standards, and to build the capacity of DRD and MOBA staff.

93. **Monitoring.** Data on the length of roads constructed, upgraded and maintained will be collected by township staff of DRD and MOBA and presented to the *Regional Road & Bridge Supervision Committees* on a three-monthly basis. Data related to the percentage of villages and the percentage of the rural population connected by (all-season) road will be collected by township and state/region staff of DRD and MOBA and presented to the *Regional Road & Bridge Implementation Committee* on a six-monthly basis. Copies of these different data types will be provided to the national offices of DRD and MOBA for entry into the rural road database. In December of each year, the key performance indicators for each township and state/region will be calculated using the data from the rural road database. The results will be consolidated by state/region and for the country as a whole, and presented to the *Regional Road & Bridge Steering Committee* to assist in determining budget allocations to the rural road sector and to the different states and regions for the subsequent financial year.

94. **Rural transport services.** It is expected that the private sector will respond to improved road access by providing improved public transport services to respond to demand. However, this will need to be monitored to ensure that the objectives of improved access are indeed achieved and that public transport services are appropriate in the type and quality of service they provide and the cost of this service. Where necessary, additional effort may be needed to improve the quality and cost of

the service. RTAD will be responsible for monitoring the quality and costs of rural transport services, with support from DRD and MOBA. Information on the number of villages served by public transport services will reported to the *Regional Road & Bridge Implementation Committee* on an annual basis.

95. **National Rural Road Agency.** By 2020, an autonomous *National Rural Road Agency (NRRRA)* will be created that will become responsible for managing the rural road sector and for preparing and implementing the rural road investment plans. The NRRRA will prepare investment plans and maintenance plans based on this strategy and other government policies. The investment plans and maintenance plans will be consulted with the *Regional Road & Bridge Supervision Committees* and subsequently submitted to the *Regional Road & Bridge Implementation Committee* for approval. The NRRRA will be responsible for overall management of the implementation of the approved investment and maintenance plans, and for reporting progress to the *Regional Road & Bridge Supervision Committees* and the *Regional Road & Bridge Implementation Committee*. The NRRRA will also be responsible for managing the rural road database.

96. At state/regional level, the day-to-day management of the planned works will be appointed to a government organization with proven experience, presence and capacity in the different townships (multiple organizations may be appointed, but each township will be under the responsibility of a single organization). All works implementation will be outsourced to the private sector or to community-based groups, with contracts managed and supervised by the appointed government organizations.



#####  
 47 1.4  
 84 5.6  
 22 6.0  
154 5.0

148142.548  
 150814.991  
 2672.443

#####

|         |       |
|---------|-------|
| 20      |       |
| 4       |       |
| 10.25   |       |
| 9       |       |
| 42      |       |
| 1.5     | 20    |
| 8       | 4     |
| 8       | 10.25 |
| 5       | 9     |
| 5       | 42    |
| 9       | 1.5   |
| 7       | 8     |
| 5       | 8     |
| 1       | 5     |
| 2.125   | 5     |
| 3.5     | 9     |
| 2.75    | 7     |
| 4       | 5     |
| 2       | 1     |
| 0.5     | 2.125 |
| 1.875   | 3.5   |
| 4       | 2.75  |
| 6       | 4     |
| 10      | 2     |
| 5.25    | 0.5   |
| 8       | 1.875 |
| 12      | 4     |
| 1.75    | 6     |
| 2       | 10    |
| 7       | 5.25  |
| 2       | 8     |
| 8.375   | 12    |
| 2       | 1.75  |
| 4       | 2     |
| 2       | 7     |
| 225.875 | 2     |
| 4159    | 8.375 |
| 4384.88 | 2     |

4

2

225.875

4159

4384.88

### Cooperation with Development Partners to improve for Rural Road

| No | Development Partners         | Project Name  | Project Duration | Financial type | Amount           | Project Area   |
|----|------------------------------|---|------------------|----------------|------------------|--|
| 1  | World Bank                   | Myanmar Flood and Landslide Emergency Recovery Project  | 2016-2020        | Loan           | US\$ 70 million  | Magway , Saggaing , Bago , Yangon and Ayeyarwaddy region |
| 2  | Asian Development Bank (ADB) | Emergency Support for Chin State livelihood Restoration | 2016-2018        | Grant          | US \$ 10 million | Chin state   |
| 3  | KfW (German Bank)            | Rural Development Programme (Phase I, II , III,IV)      | 2014-2018        | Grant          | Euro 38 million  | Southern Shan State                                      |
| 4  | KfW (German Bank)            | Rural Road Rehabilitation Programme (RRRP)              | 2016-2018        | Grant          | Euro 10 million  | Kalay Township inSaggaing Region                         |
| 5  | ReCAP                        | Research for Rural road                                 | 2016-2018        | Grant          | UK£1.28 million  | Shan state and Ayeyarwaddy region                        |